

THE PHONOGRAM

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[No. 3.]

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A MAGAZINE devoted to all interests connected with the recording of sound, the reproduction and preservation of speech, the Telephone, the Typewriter, and the progress of Electricity.

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ADVERTISEMENTS.

THE PHONOGRAM, having special facilities in its circulation through the vast commercial system occupied by the Phonograph, Telephone, and other Electrical Devices, presents an exceptionally valuable advertising medium. The rates are reasonable and will be furnished on application.

CORRESPONDENCE

relating to the Phonograph, Typewriter, or Electricity, in any of their practical applications, is cordially invited, and the cooperation of all electrical thinkers and workers earnestly desired. Clear, concise, well-written articles are especially welcome; and communications, views, news items, local newspaper clippings, or any information likely to interest electricians, will be thankfully received and cheerfully acknowledged.

The Phonograph—King of Library and Counting-Room.

FROM the vigilant and practical West there comes to us the following query, propounded by one who is not only interested in the phonograph but anxious to see it made the most useful of man's servants. He asks, "Is the absence of deserved popularity in the phonograph due to itself, the management, or the public?"

The best answer is to be found in comparing the phonograph with what, in the language of the turf, may be called its "running mate," the typewriter. The latter is no more a factor in business economy than the former. Yet at one bound it leaped into the good graces of the public, while the phonograph still stands waiting to be summoned to even a higher mission, and to perform functions that make it an infinitely superior medium for the communication of human thought.

One merely preserves the signs of written language for the eye; the other crystallizes the sounds of that language, its accents, tones and modulations, and so preserves the very essence of speech. To carry the simile still further, one is the race-winner; the other only a helper, while both speed around the track.

There being no inherent defect in the phonograph, its lack of general use is due to other conditions for which, in the main, its business promoters are responsible. Let us again speak comparatively.

The typewriter, even in its rude state, was a revelation. Wherever commerce, art, science or literature flourished, there it found an open field awaiting it. The merchant and lawyer encouraged it, additional salary rewarded the expert, and private and public instruction were quickly invoked to obtain the training necessary for its use.

The wedge having entered, the manufacturers of the typewriter promptly placed it upon the market as a commodity and a bread-winner. Instead of exhibiting it as a toy, they wisely emphasized its utility for work. Its destiny was at once fulfilled. The typewriter has therefore taken its place among the essentials of business life. And yet, its relationship is purely subjective. It occupies the position that belongs to the phonograph. It economizes only a fraction of the time which, in this quick moving age of ours, is of such inestimable value to all men of affairs.

When the phonograph was introduced to the public its first exhibition was upon a public platform. Its first impressions were made in connection with mere amusement, and, unfortunately, for its prosperity in the sphere to which it is best adapted and for which it was originally intended, those impressions still remain. That great companies have been formed and in this respect have

made the phonograph popular and attractive to the masses is a natural sequence and to a certain extent not without its advantages. They have familiarized the public with the possibilities of the phonograph and paved the way to its legitimate use; not as the mechanic who transcribes written speech, but the confidential companion who receives and retains thought—the secrets, if need be, intended for no human ears save their own or those of closest friends.

This superior function of the phonograph, therefore, is that which is destined ultimately to give it a preponderating influence among all the mechanisms thus far invented for economizing human labor in the library, counting-room and study. Any other use, however attractive or profitable, is subordinate to this essential attribute.

After a while the importance of this view will be realized, and those who have condemned us for urging the only true policy to be pursued in introducing the phonograph into general use will discover their error and begin to make up for lost time, and, possibly, money. The single aim of every one interested in this remarkable instrument should be to develop its largest capacity in the sphere it occupies, and to do this it will be necessary to break away from present lines of operation.

First, schools of instruction may be profitably opened; when the pupils are trained furnish them and the phonograph together. Secondly, wherever it is possible to do so the phonograph should be sold; leased property is rarely cared for. Had typewriters been rented in the beginning of their career, it is safe to say that ninety out of a hundred would have been returned as unsatisfactory, and nothing like their existing popularity would have been attained. And finally, every agent and company engaged in the business of introducing the phonograph should remember that in advocating its claims, the highest and noblest uses of which it is capable should be demonstrated as paramount to any mere pleasure it may afford by reason of its wonderful adaptability to individual or social entertainment.

V. H. McRAE.

The Divisibility of Electric Power.

With the passage of time, evidences of the utility of electricity as a factor in the world's work are continually increasing. Upon its appearance in the field of distinctive forces, to which the genius of Gilbert and Franklin had coaxed it, the single idea prevailing in the minds of those men was to prevent it from inflicting injury.

In after years it became what may be called a medical agent, being resorted to by physicians to restore circulation in the human body, to quicken impaired vitality, and perform various important functions. Advancing next to the part of a transmitter of thought and a recorder of the same, and still pressing onward in the path of progress, it became successively a torch-bearer to the world, and a universal motive power.

Steam, light, heat, certain gases, and chemicals are valuable agencies within a definite compass, but electricity surpasses all these in the extent of its sphere, as gold ranks above all other metals in valuable qualities.

Occupying this position, electricity is attracting in a marked degree the attention of the multitude.

Electricity on Public Highways.

VALUABLE instructions conveyed in a clear and pleasing shape to the New York State Bar Association on the occasion of their recent meeting at Albany, N. Y., through an address delivered to them by the Hon. John S. Wise, of the New York Bar, is now placed at the disposition of the general public in a pamphlet containing a printed copy of his remarks upon electricity.

Alluding to the rights of corporations on public highways, he is led to explain and relate the properties, laws, and phenomena of electricity, and states that, "About 1838, Steinheil and Morse simultaneously discovered that the earth would supply a return conductor for all generated electricity; that is to say, that conducting the positive current upon wire to any distance from the generator, and connecting the negative pole of the generator to the earth, the circuit could be established by inserting the end of the positive wire into the earth, even at great distances from the generator. The surface of the earth is filled with electrical conductors. So great is its conductivity that electricians frequently refer to the 'infinite conductivity' of the earth. The first inventions in telegraphing had used wire for the return as well as the outgoing current. Whenever currents are thus conducted throughout their entire course upon wires, they are known as complete metallic circuits. Where the wire is used only for the outgoing current, and the circuit is completed by using the earth, the circuit is known as a ground circuit. I shall have occasions to refer again to this matter of grounded and metallic circuits."

Speaking of the currents on the rails of electric street-cars he describes their movements thus: "The infinite conductivity of the earth is such that the electric street-car current, when it passes

from the wheels to the rails, cannot be confined in its return to the rails themselves. Released from his labors at the motor, this weird Ariel springs from the wheel to mother-earth with the romp and playfulness of a boy let loose from school. Once in contact with the soil, the homeward course of electricity will not be confined to a straight and narrow path of any artificial conductor, however good, but, seeking the moist earth and veins of minerals or metallic substances as they are reached in the return, it dances and plays along them, as if delighting in its temporary release from the strict confinement of its master. Thus it is that the current released at the car-wheel, and starting back to the generator a mile away, it may be, may zigzag, and wind back and forth, through subterranean conductors far out of the direct course to its negative pole; and hence it follows that neighboring grounded telephones are ridden upon and danced upon and rung upon, as truant elfs and goblins dance on Bottom in a *Midsummer Night's Dream*. The variations of the current in this class of street-railroad circuit, and the noise of the dynamos and motors are greater than that of the electric lights, and the parallelism of wires with those of the telephone more certain, so that the advent of this form of electric railway construction was a new torture, both by inductive disturbances and greatly increased earth-leakage, to the grounded telephone systems."

Obituary.

EMILE REYNIER, the distinguished French electrician, died January 20th last, aged thirty-nine years. He was born at Paris, May 17, 1851, and left school at fourteen to work with a tinsmith. Two years later he returned to study, so as to secure a diploma in engineering, and up to 1875 devoted all his spare time to the exact sciences. Shortly afterward he thought of the metallization of arc-lamp carbons. He was the first to construct (in 1878) an incandescent lamp in the open air, and when accumulators were first thought of he gave up his own original researches, and devoted himself entirely to accumulators with M. Faure. The February number of THE PHONOGRAM reproduced his latest device in this line. Besides numerous articles in the technical periodicals, he was the author of several chemical publications. He was stricken down very suddenly by pneumonia, at a time when he was devising improvements on his late invention.

A Lawyer's Opinion of the Phonograph.

The following letter is one of the many we have received, and is such a strong endorsement of the practical working of the phonograph for business purposes that we give it entire.

CHESTERTOWN, MD., March 2, 1891.

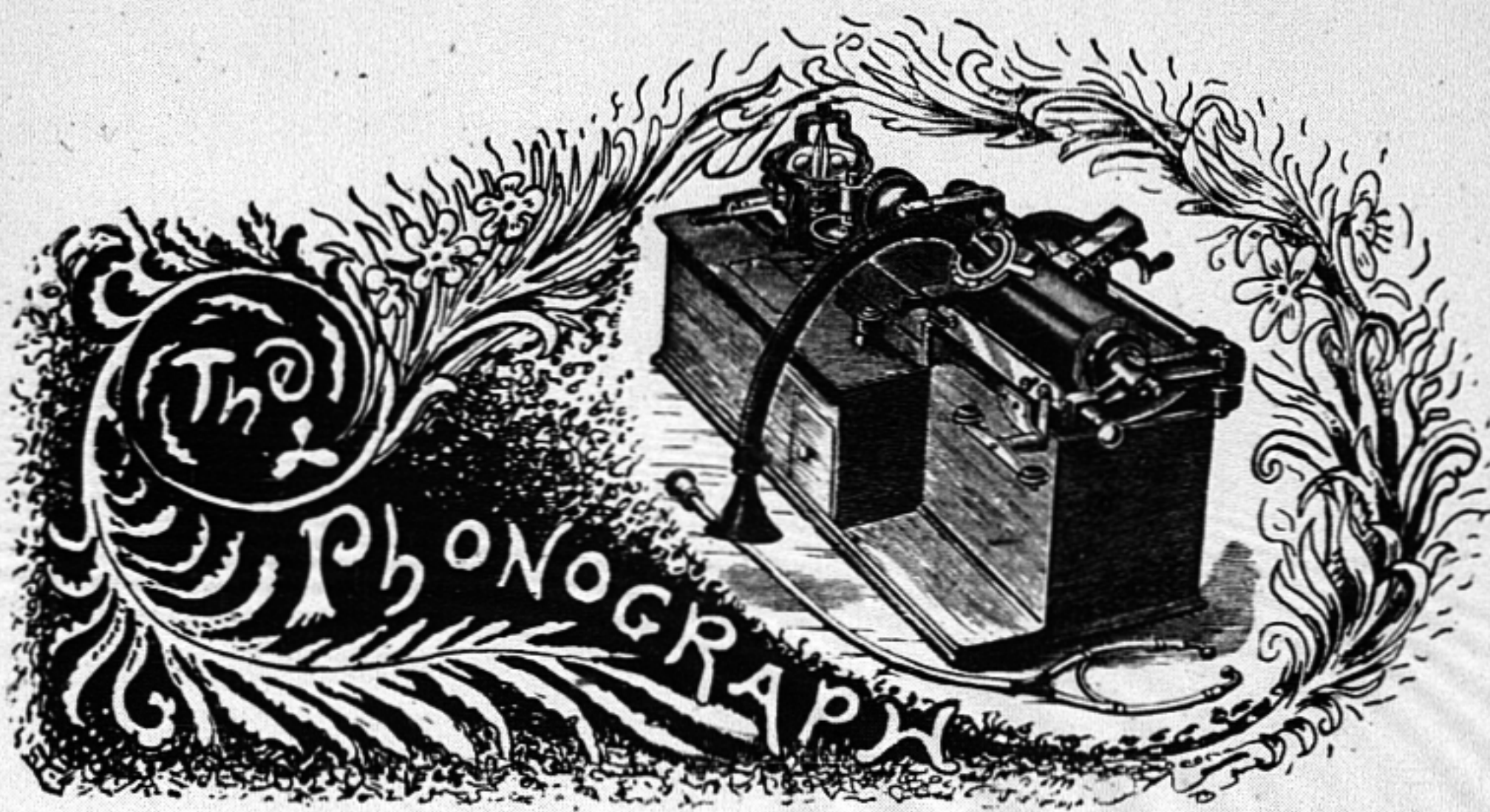
To the Editor of THE PHONOGRAM:

DEAR SIR: The PHONOGRAM is received; please continue sending it. I am not an "officer of a company," but perhaps I used the first phonograph outside of New York and the largest cities in regular office work. I began with it three years ago. Since then the machine, being replaced by the latest phonograph, has been my *alter ego*. I use it six to eight hours a day—and am only a country lawyer. I am not rich, but if it could not be replaced I would not be tempted with an offer of \$5,000 to part with it. I seldom dictate less than thirty and frequently fifty and sixty letters per day. Besides this I dictate warrants, deeds, leases, bills in Equity, answers and complicated legal papers. All these I did with the old treadle phonograph, using a raw boy of fifteen to do the work. He improved so rapidly and became so expert that he is now getting a fine salary as an assistant of the *Senate Reporter*. I get many inquiries about the utility of the instrument and you may imagine I am not slow to praise what being without would make life a burden. It saves me *three hours* daily the work of a slave, that is the drudgery which so wears on me. You appear to be pressing its claims to utilitarianism—it is not a toy but a second Eve to all toiling Adams. I am glad to see such a work published, and may you have success. I'd like to hear more definitely of the new machine you hint at. What may we expect?

Very truly,

HOPE H. BARROLL.





THE NICKEL-IN-THE-SLOT MACHINE DEFENDED.

BY W. CONYNGTON, NEW ORLEANS, LA.

BROTHER of the silvery tongue," said the business phonograph as the stillness and repose of night filled a large and erstwhile busy drug-store, "how has it gone with you to-day?"

"From the quality and quantity of metal I have swallowed," replied the slot-machine, "my tongue should rather be nickel-coated. Scarce have I rested this whole long day, as the contents of my cash-box will amply testify. How has it fared with you?"

"Letters! letters! letters!" responded the business machine; "with a few dry and tedious statements as the only variation. I assure you, were it not for the superiority of the business use, I should be inclined to envy your task, which is, at least, a melodious and pleasant one."

"Hold hard there, brother, hold hard!" cried the slot-machine. "Where does that superior dignity come in? It strikes me there are two sides to that question."

"Why!" replied the business machine, "I intended no slur on you, only I thought it was everywhere acknowledged that business use was the highest and, in fact, the

only proper vocation of a perfected phonograph, while the nickel-in-the-slot machine has been variously termed 'A mere music-box,' a panderer to amusement and the like."

"Well, now," said the slot-machine, "let us examine this charge somewhat in detail. When the phonograph was less familiar to the public, and the music used inferior in quality, and often badly adjusted, that imputation was indeed made with a show of plausibility; but he who can now listen to a reproduction of the finest band music, a fine vocal selection, or a merry, rattling xylophone piece with orchestral accompaniment, and then call the phonograph a mere music-box, has no claim to be called a critic; he is simply an ignoramus making a display of his own verdancy and presumption."

"True enough, brother," replied the other; "still it is acknowledged that business is our chief use, and your work, dealing as it does with nothing but music, even though it be the finest, has a tendency to cause people to regard the phonograph as a mere toy, with no practical application in the real business of the world."

"Let us see," said the slot-machine, smil-

ing through the beveled glass of its case; "you claim to be strictly business; how much have you earned to-day for the frail bundles of flesh and bone for whom we work?"

"Just how much I cannot tell; but in a single letter references were made that may result in gains of hundreds of dollars, while other letters were of much importance, and may secure large profits."

"Like enough," responded the other; "still these letters could have been taken by a stenographer, and by your own admission you cannot tell just what they will result in. Now, I can tell to a cent what I have earned. To-day I have taken in fourteen dollars, thirty-five cents; yesterday I took seventeen dollars odd, and the day before, thirteen dollars, fifty cents. It seems to me this is a very practical application of the phonograph, and a decidedly business one to boot. I earn money absolutely, while you only aid in business operations that would be carried on had there never been a phonograph under heaven's broad canopy."

"But," said the business machine, "you will allow that many who hear the nickel-in-the-slot machine, go away with an impression that this is all it is good for, and this interferes with the introduction of the phonograph for office work."

"What you say," replied the slot-machine, "is a splendid illustration of the inconsistency and weakness of reasoning of our matter-of-fact business men outside of their accustomed business ruts. One who claimed that a steamer's ability to make good headway against wind and tide argued a want of capacity to do as well with wind and tide in her favor, would be considered a fair candidate for the lunatic asylum; but the man who gravely concludes that a machine's capacity for perfect reproduction of all kinds of musical or unmusical sounds, whether of

the human voice or of instruments, argues a lack of power to reproduce with equal fidelity the far fewer tones required for business correspondence, goes at large, and his advice on the subject is taken by other Solomons of the same character. The proper way to deal with such sophistry is by pushing the introduction of the phonograph as a practical aid in business offices, and this our enterprising phonograph companies are constantly doing without neglecting the very important financial advantages of the nickel machine."

"Well, brother," said the business machine, "you have evidently thought considerably on these matters, while I have naturally given them less heed; but what can you say to the charge of its degrading the phonograph to engage in such picayune business, and that its use as an attraction in bar-rooms is an unmixed evil?"

"To the first part of your question," replied the slot machine—"that the phonograph is able to take such position without any degradation whatever. The picayune character of the business is common to all our daily papers, the steam-ferries, street-cars, and other enterprises of most undoubted utility and respectability. The drawback of being used as an attraction in saloons, it shares with all fine furniture, plate-glass mirrors, musical instruments, and even the commonest articles of daily food; and this fact is no more a reflection on the phonograph than on the other useful and attractive articles used in the same way. And now, as we are on the temperance question, and have talked ourselves dry, suppose we smile." And, for the second time, the nickel machine smiled benignly through its beveled glass; but the business machine, having no glass, could only give a dry, short laugh, acknowledging that the other had rather the best of the argument.



A HIGHER MISSION FOR THE PHONOGRAPH.

BY PÈRE ABSINTHE.



RE not the spiritualists' dreams of materializing the human spirit almost realized in the phonograph? The voice, which is the only manifestation we have of the soul or mind, is here

recorded for future reference, not as the stenographer records it, but the very tone and accents. This surpasses even that incomprehensible phenomenon, the human memory.

Wonderful as the phonograph is at its present stage of perfection, it is needless to say that it is still in its infancy. There is scarcely any limit to its possibilities. The phonograph of to-day will be looked upon a decade hence as we now look upon the daguerreotype or the hand printing-press.

As for its utility, there is simply no limit. Of course it will become every day more popular, more indispensable in commercial houses as a medium of correspondence, as the merchant comes to realize the difference between a stenographer who is apt to err at any time, and the phonograph which never errs, always tells the truth.

To enumerate some of the uses to which the phonograph may be put, aside from the two principal ones to which it is at present devoted, viz., commercial work and amusement, I might mention the following:

Detective work in taking secret conversations in which any other evidence might be disputed.

In interviewing prominent persons for the use of the press. It is a notorious fact that not one interview in a thousand as publish-

ed bears the slightest resemblance to the actual interview. This is due largely to the reporter trusting his own memory, and sometimes his desire to flatter the interviewed by putting fine sayings into his mouth that he would be utterly incapable of.

But perhaps one of the highest functions of the phonograph will be in the hospitals. The sick and weary soul, friendless and alone—or if he have friends they are thousands of miles away—pines away for want of a cheering voice. He is tired of hearing the stereotyped phrases and monotonous voice of the nurse and the cold and conventional words of the doctor; he yearns for a change. He would be delighted to hear the voices of happy childhood, the conversation of celebrated people, or the singing of a great prima donna; but these things are beyond his reach. Health and liberty in the one case and wealth in the other are necessary for the enjoyment of such luxuries, and he pines away without them. But with the phonograph, presto! the whole face of nature is changed. The patient has a seance all to himself. The spirits of the mighty dead and the illustrious living come and converse with him, pour out their stores of knowledge, their deepest philosophy, their keenest humor or their sweetest songs. Here he may hear the prattle of merry childhood, the braying and lowing of animals, the chirping of insects or the twittering of birds. Through what other medium can such pleasure and satisfaction be derived, I should like to ask? If one-half the money that is expended for flowers were devoted to the leasing of phonographs for hospital use, there would be many happy faces where there are sad ones now, and a decided falling off in the use of therapeutics.

"CHARLES MARSHALL, NEW YORK CITY."

FEW persons there are in phonograph circles who have not heard the familiar announcement, "record taken by Charles Marshall, New York City." This announcement has been made personally by Mr. Marshall on upwards of thirty thousand musical phonograms during the past two years.

Mr. Marshall is a born phonograph artist. His ability to cope with this particular branch of the business is acknowledged, by those acquainted with him and his special work, to be the greatest expert or artist in the manufacture of musical records in the world. No one man has made as many records, or of such great variety. The quality of his "records" was of the highest order—perfectly taken—which reflected great credit not only on the artist, but on the phonograph.

For a period of eighteen months Mr. Marshall made all the musical records sold by the Metropolitan Phonograph Co., of New York, under contract with them.

He made Cappa's Seventh Regiment Band of New York very popular on the phonograph. This band was employed one day regularly every week. From three hours' playing of the band Mr. Marshall has frequently taken three hundred records, making each announcement through the speaking tube for each record himself: he used ten phonographs. The greatest novelty taken by him was the records of Trinity Church chimes; over twelve hundred of

these records were made during the winter of 1889-90. Mr. Marshall kept two machines in the steeple for this work. He also took the records of Grace Church, and of St. Thomas Church, of New York. He has in his possession records from these "chimes" made at midnight in the ringing of the old year out in 1889.

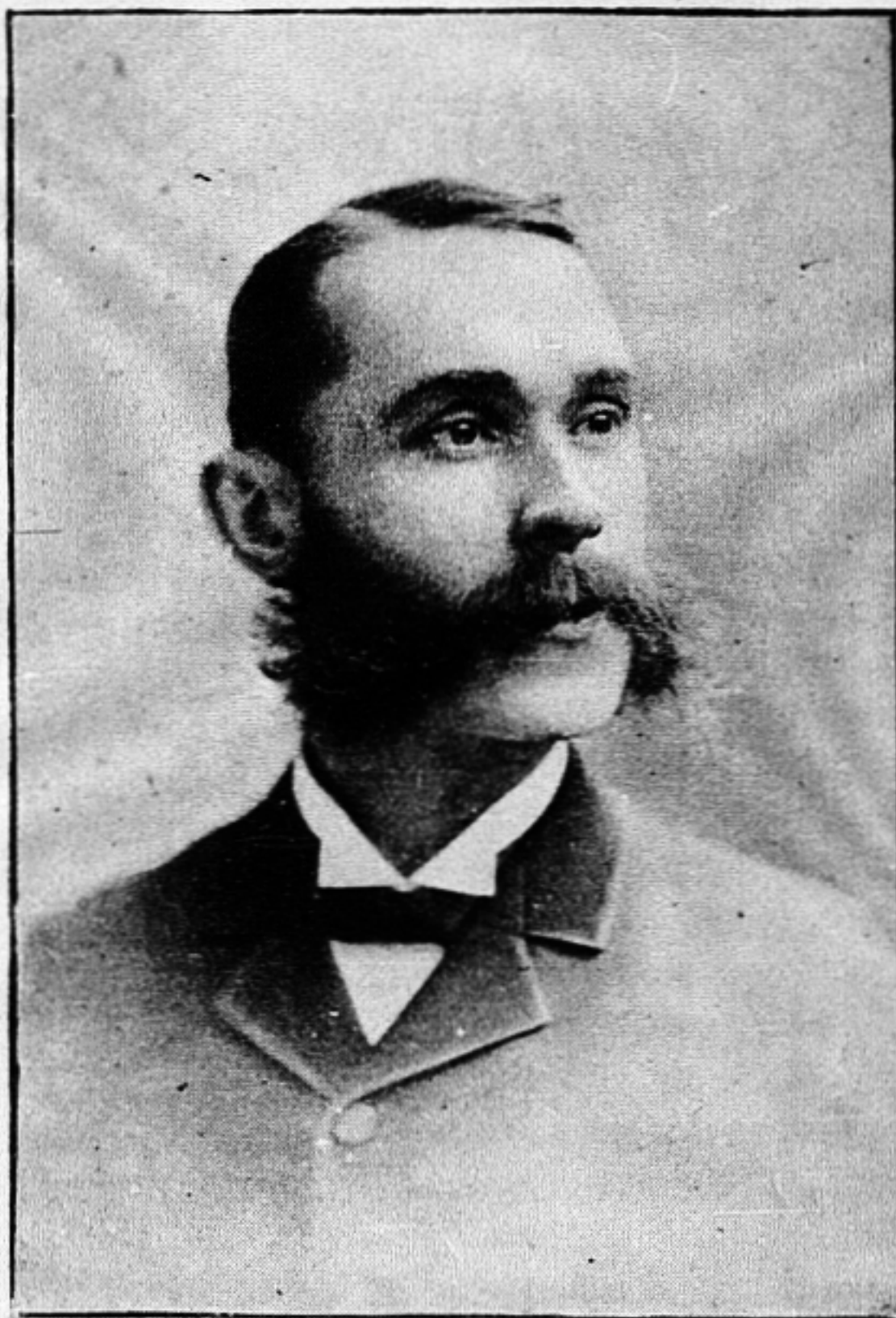
Mr. Marshall also took the splendid records now in the possession of many well-known people, of the great singers of Mme. Patti's Opera Co., when they were here last.

Mr. Marshall always took great care to make his announcements on each record very plain, so that the reproduction would be an advertisement of the phonograph, and could be plainly and readily understood by the hearer. He has a wonderfully clear voice for that purpose. He says a musical record is half made by a perfect announcement. The various companies who make their announcements through the horns when taking records should profit by this.

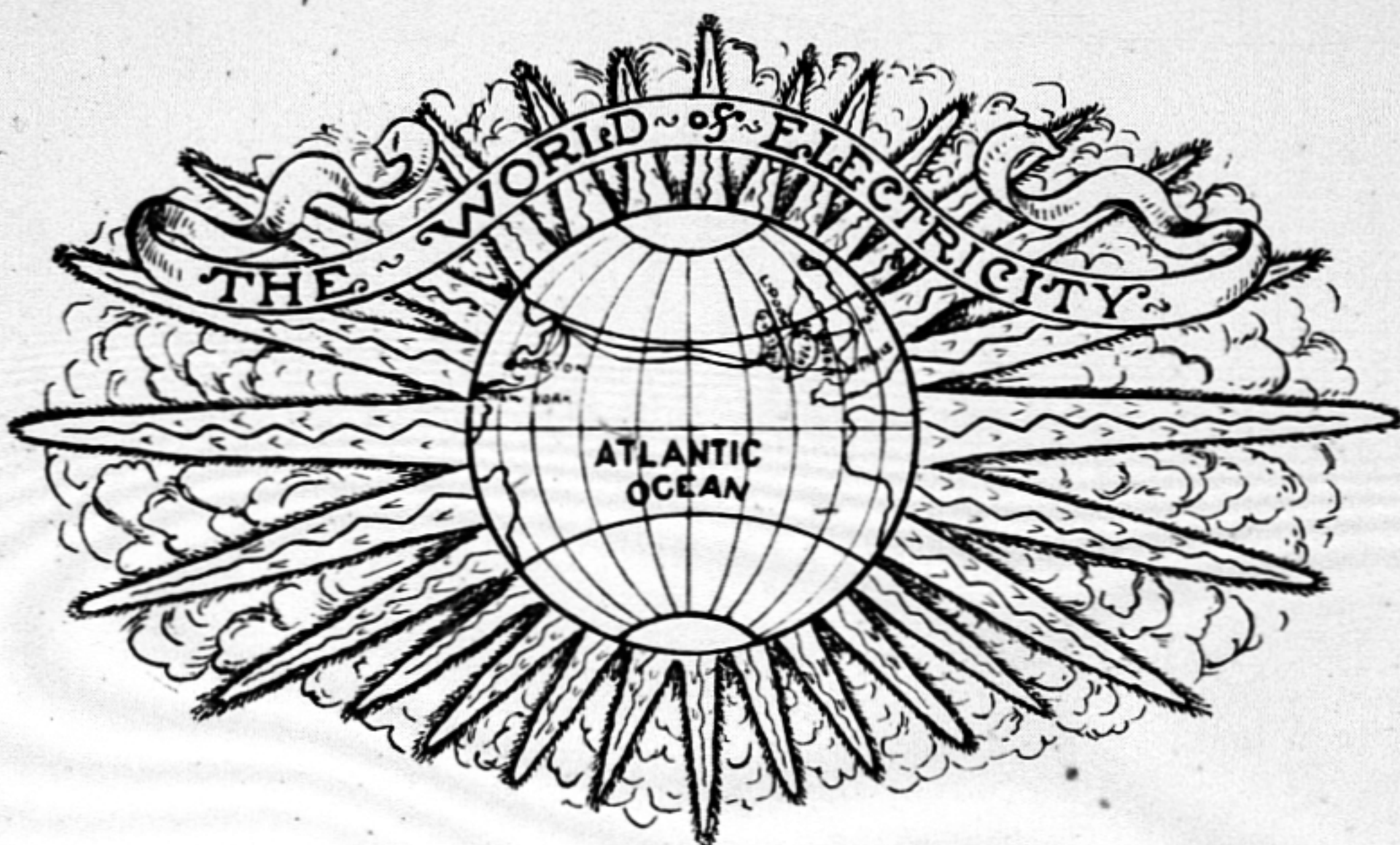
Nothing is more

gratifying to a listener to a phonograph than a clear and distinct announcement at the beginning of a record.

Mr. Marshall's advice to all who make or take records, is to keep the phonograph in perfect condition. No set rules can be given as to how to take records; this is a matter of good judgment, and lies entirely with the operator. Making musical records is like taking photographs. You get your results according to the skill employed.



CHARLES MARSHALL.

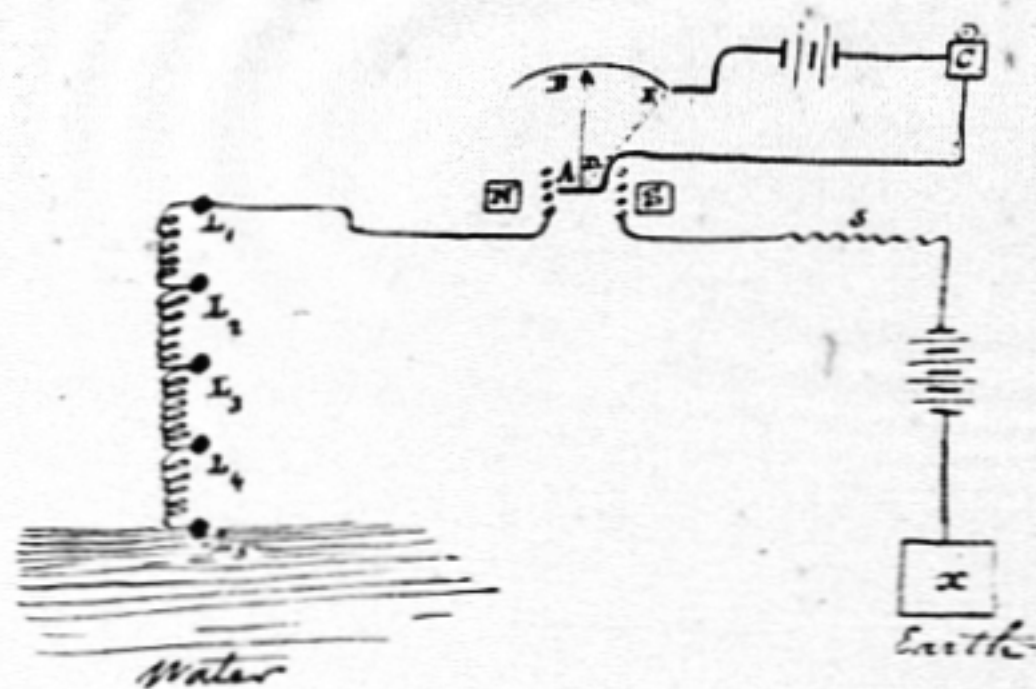


Automatic-Electric Warning Against Floods.

A VALUABLE device to automatically notify the inhabitants along river banks and low districts of an increase in the water-courses of the regions higher up, and to warn in time against inundation has been constructed by Mr. Morais Otto, of Saint Raphael (Var), France. It is thus described in a communication to *La Nature*:

In any public building, say the mayor's office, or a schoolhouse, in each commune, he places a galvanometer so arranged as to indicate automatically at every moment, day and night, the water-level as it exists in the upper district, say at a distance of 30 miles (or more, if necessary). The galvanometer he uses is an ordinary Mariel Duprez, with magnet. Referring to the sketch below, the movable needle, AB, runs around a sector whose divisions correspond to the various heights of the waters. The frame of the galvanometer, represented in section on the sketch, between the two poles of the magnet, N and S, is inclined sufficiently so as to allow a wider play for the movements of the needle. On the glass face of the apparatus is another movable needle, DE, which may be placed at any division required of the graduated sector. As the level of

the waters rises, so soon as the indicator-needle, AB, strikes against the end (bent at a right angle) of the needle DE, so soon does it close the circuit of a local pile which has a bell inserted at C, and this begins to ring. This takes place only in case of extreme danger. A resistance is arranged at S in the general circuit which is intended to regulate or check the amplitude of the deviations in the galvanometer. To protect the galvanometer from the effects of lightning, the inventor has arranged a lightning-rod of fusible wire with points.



The next arrangement is one that enables anybody to read constantly the height of the water in a river or torrent situated at a distance from the observer. A hollow iron post is placed upright in the bed of the river or stream; and the line wire ends on an in-

ulator at the top of this post. At intervals of about four inches each from the bottom of the post, the latter has small metallic plates, properly insulated, L_1, L_2, L_3 , etc., and these are connected by means of bobbins of about 10 ohms resistance, placed inside the post. The top of the post is connected with the galvanometer, and the circuit then continued through a resistance (s), a pile, and the earth (x). The best pile he has used for the purpose is one composed of several Daniel elements. Now, let us suppose a thaw to occur; the water rises along the post, thus establishing communication between the small metal plates and the iron of the post which is planted in the earth. At every rise of four inches the resistance of the circuit diminishes 10 ohms on account of the very position of the bobbins of resistance. The intensity of the current is, in consequence, increased, and the needle, AB, of the galvanometer runs forward one degree, which corresponds to the four inches, that is to say, to the exact distance which separates two consecutive insulated plates. On the other hand, when the waters fall the inverse result takes place. The resistances of 10 ohms, occurring successively in the circuit of the galvanometer, cause the intensity of the current to correspondingly diminish, and this is indicated by the retrograde movement of the indicator-needle. Thus, by watching the movements of the needle along the graduated sector of the apparatus, an observer can readily tell the height of the waters in the more elevated district afar off at any particular moment.

THE committee in charge of the Patent Celebration, on the 8th, 9th, and 10th of April, at Washington, announce that, in consequence of the limited seating capacity of the hall in which the addresses will be delivered, that admission will be by ticket only. This rule applies also to the public reception at the Patent Office, and for the excursion to Mount Vernon. Apply to J. Elfreh Watkins, Sec., 811 G St., Washington, D. C.

Electrical Matters of Interest.



PROFESSOR MORSE, in 1868, was tendered a banquet in recognition of the valuable service he had rendered to the country in the development of the telegraph. The responder to one of the toasts was the Hon. Edward Thornton, then British Minister,

who, in the course of his most interesting speech, said: "Should I have the good fortune to live to the age of the venerable professor I still hope to see some such improvement as will enable us to carry on a *viva voce* conversation by means of the cable. We shall then have merchants on this side of the water discussing their affairs with those of the other at so much a minute. We shall hear, perchance, of some love-stricken youth of London or Paris whispering soft nothings along the cable to a bewitching siren of New York or Providence, at so much an hour, she tempting him (Leander-like) to throw himself into the gulf which separates them. We shall then have statesmen, and in those days of progress possibly stateswomen, discussing international questions at so much a conference; and diplomats will run a very good chance of being exploded altogether." This was a very remarkable prophecy, and so much of it has already been verified in the score of years that have passed since it was uttered that, although we may think our limitations in long-distance telephone work are practically reached, it is impossible to say what time may elapse before the truth of this now historical prediction is fully confirmed.

THE FOUNDERS OF ELECTRICAL SCIENCE.

BY FELIX DAHN, PH. D.

No. 2.—OTTO VON GUERICKE.

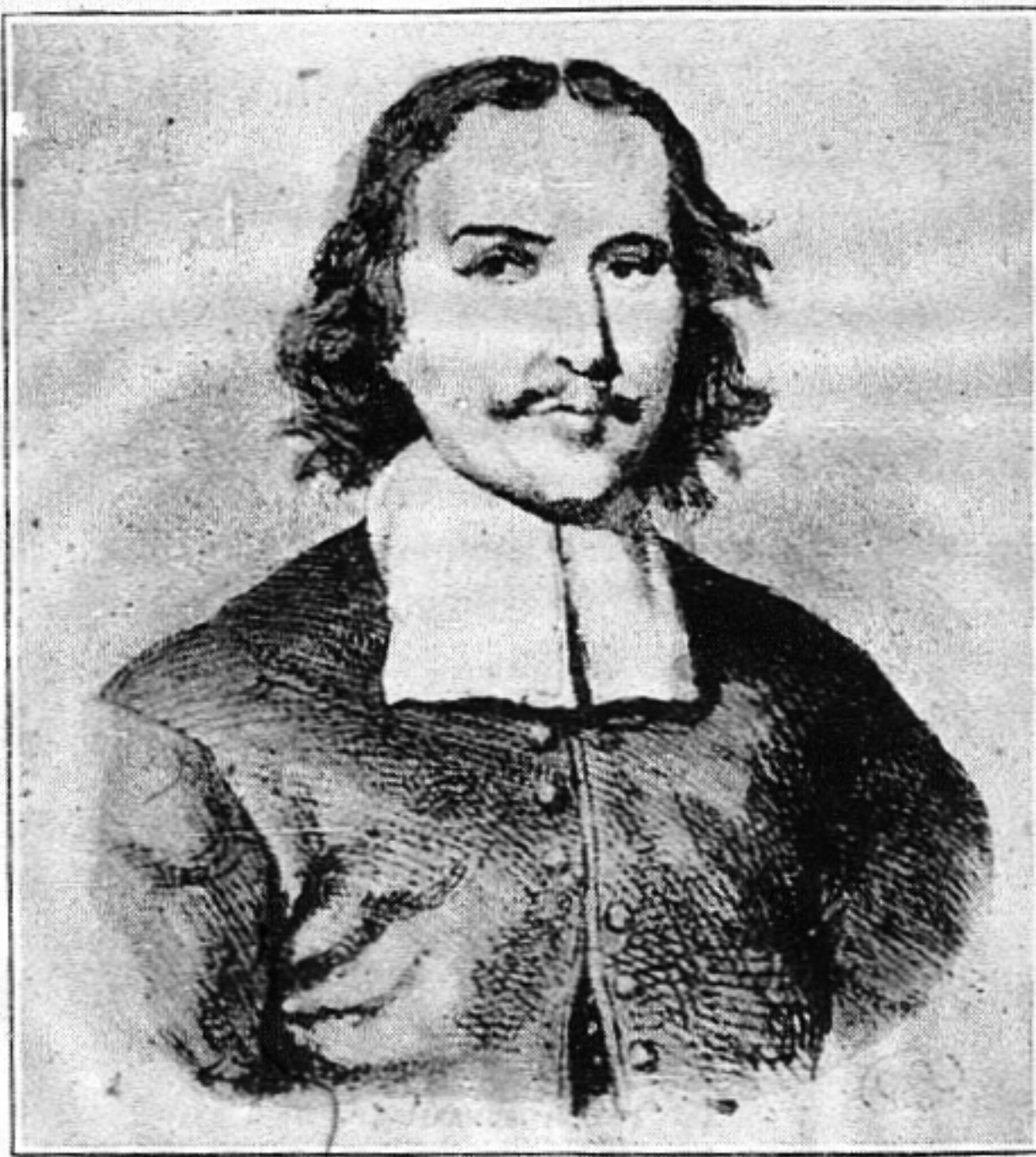
IN the preceding paper we gave a sketch of Dr. William Gilbert, of Colchester, England, one of Queen Elizabeth's physicians, and pointed out the fact that to him belongs without question the honor of being recognized and called the father of electricity, and also that his famous work, entitled *De Magnete*, published in the year 1600,

may be regarded as the cradle of that branch of science that has given us the telegraph, the electric light, the dynamo, the electric motor, the telephone, and many other wonderful and useful things that have so profoundly affected the world. The next name on the list of the pioneers who pushed their investigations into this new field of science, is that of the illustrious Otto von Guericke, burgomaster of Magdeburg, and the in-

ventor of the air-pump. To him science is also indebted for the *first electrical machine*. Among the substances recognized by Gilbert as possessing the same property as amber, was sulphur. Exactly seventy-two years after Gilbert published his famous treatise on the "Magnet," namely, in 1672, Guericke published his work also in Latin, entitled *Experimenta Nova Magdeburgica de Vacuo Spatio*. In it he described the method of preparing his machine, and we quote his own words:

"Take a spherical glass bottle as big as a child's head; fill it with small pieces of

sulphur, and bring it near the fire so as to melt the sulphur. Then let it become cold, and break the glass in order to get out the sphere of sulphur, which you will keep in a dry place. If you like, you may make a hole through it, so that it can be turned round on an iron axis, and the globe will then be ready for use."



OTTO VON GUERICKE.

Very simple, indeed, but with this machine, if such it can be called, Guericke discovered that light substances which had been attracted by the excited sulphur were afterward repelled until they had touched some other body. In other words, that electricity was manifested by *repulsion* as well as *attraction*. Moreover, with it he first noticed the *electric spark*, "and that was the real genesis of the electric light."

As was to be expected, so it

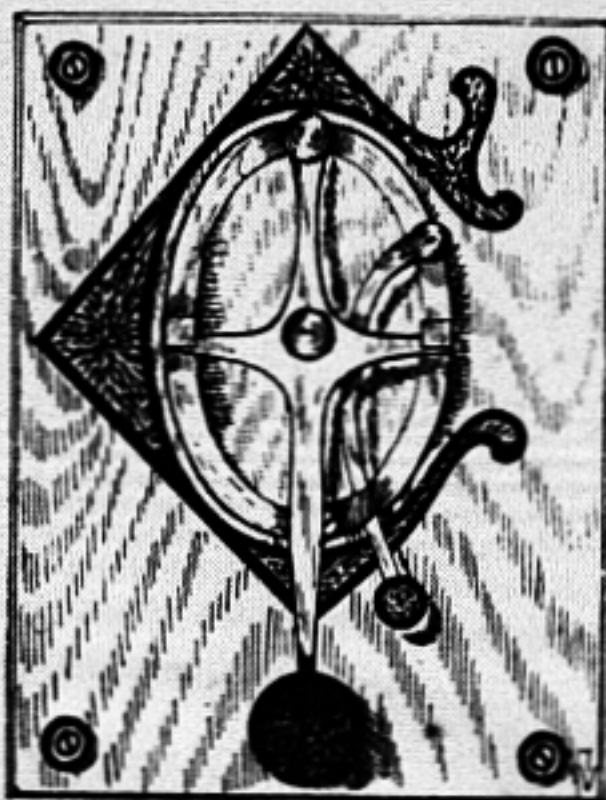
happened—his comparatively weak machine was rapidly improved and made more powerful. That

"Science moves but slowly, slowly,
Creeping on from point to point"

is true to-day, and, strictly speaking, probably always will be. But there is no question that as it gathers volume and momentum it will grow with accelerating speed, adding knowledge unto knowledge. If science be likened unto a river, and if Gilbert be considered as the fountain-head, then Guericke is the first important tributary.

So far, then—Gilbert and Guericke.

Lightning-Arresters.

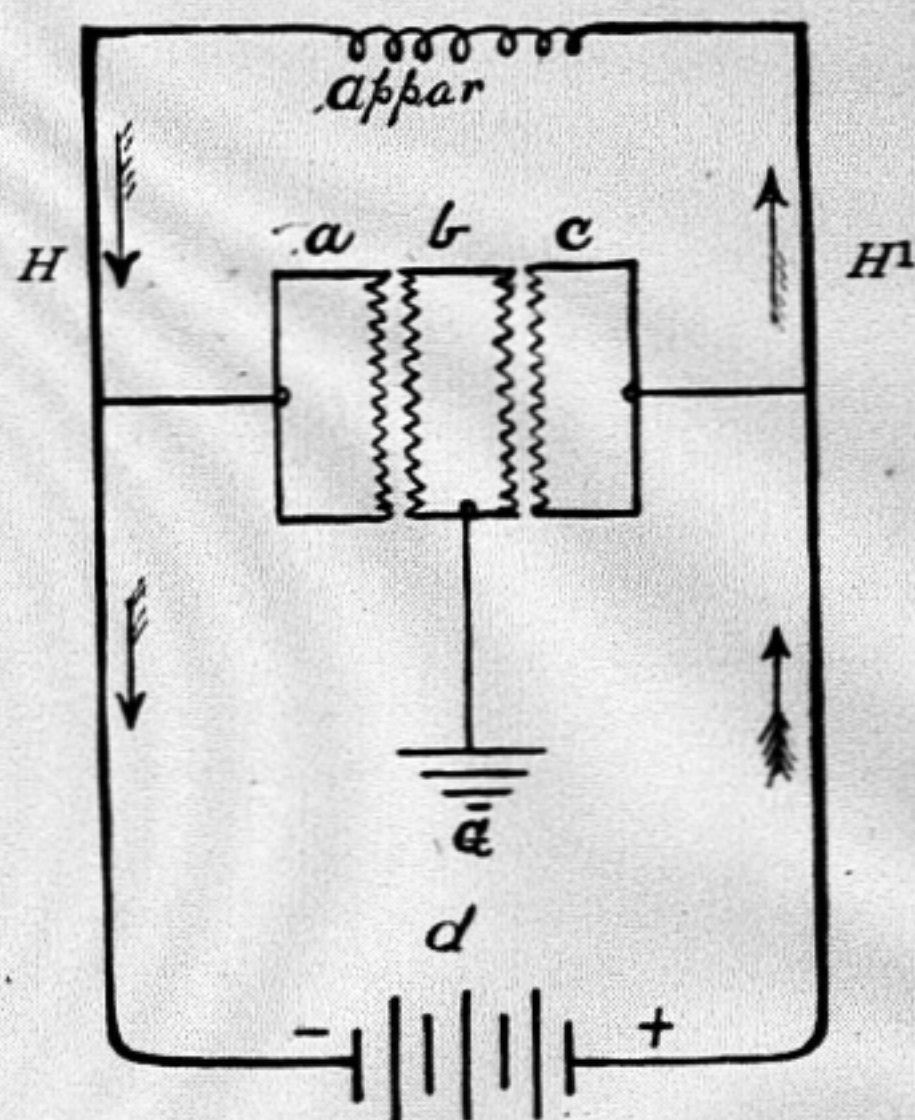


CURIOUS as it may seem, a lightning-arrester is an instrument which has nothing to do with lightning. Electric wires are seldom struck by lightning. The trouble

experienced with such wires during a thunder-storm is the fact that they become charged with static electricity. The object of a lightning arrester is, then, to conduct this static charge to the ground without allowing it to pass through the instruments or dynamos in circuit. This static charge is very similar to that found on a leather driving-belt in cold, dry weather. It can often be generated on the human body by simply walking over a thick carpet.

Static electricity, when generated on an electric wire under the influence of a thunder-storm, is very intense—that is, its pressure is very great. It has been found that this kind or form of electricity is not as readily guided by a copper wire as is the ordinary electric current. The tendency of the static charge is to reach the ground by the shortest and easiest path possible. For example, rather than whirl through a coil of insulated wire, it is very apt to burst through the insulation, and so pass directly from one convolution of the wire to the other. Now, as there are many coils of insulated wire in an electric apparatus, it is very necessary that all static charges should be conducted to the earth without rupturing any of the insulation. A lightning-arrester is really a safety-valve, and if it does its work properly it will allow the static charge to escape to earth, and at the same time check the useful current from following in

its path. Fig. 1 illustrates a simple form of this instrument, the connections and working of which are as follows: d is the battery, showing positive and negative poles; H and H^1 are wires, conducting to whatever electric apparatus there may be in the circuit; a , b and c are small brass plates, having saw-teeth. The saw-teeth points of two adjacent plates should be separated about one-sixteenth of an inch. The centre-plate b is connected to earth at G , as shown, and the plates a and c are connected one to each side of the circuit H and H^1 . Now, if a static charge of electricity should accumulate on the line H^1 , its pressure would



quickly become such that it would jump across the air-space in between b and c , and so pass to the ground; but the battery current will not follow, its pressure not being sufficient to jump the air-space. The same action will of course take place from the side H , and the plate a to b . These plates and air-spaces are necessary, because if both sides H and H^1 were connected directly to the ground, then the current from the battery would pass from one pole to the ground, and then from the ground to the other pole, and thus establish what is called a "short circuit"—that is, a short cut. Under such circumstances the current would not pass

through the rest of the line and apparatus to do useful work.

Such a lightning-arrester as above described is all that is needed for circuits using low-pressure currents. But when high-pressure currents are used, as in electric-light circuits, the conditions become a little different. Suppose that at d , instead of having a battery, there is a powerful dynamo, generating a high-pressure current; and suppose further, that the air-spaces between the brass plates are so adjusted that, under all ordinary circumstances, the current cannot jump across. If now, however, the lines H and H_1 become charged with static electricity, and a discharge takes place to the ground, as before explained, the dynamo current will follow, and thus short circuit the generator. Then, if this short circuit is not instantly checked or broken the arrester will be burned up and the dynamo seriously injured. The reason why the dynamo current will follow the static discharge is this: When the discharge takes place a spark is formed, which is a sufficiently good conductor to conduct the dynamo current over the air-space, and this current having once started, and having great pressure behind it, will continue to flow unless some means are provided for checking it. In the earlier forms of lightning-arresters this was accomplished by placing a long lead fuse in the lightning-arrester circuit, so that when the short circuit occurred the fuse was melted, and thus the abnormal flow at once checked. The trouble with this arrangement is, that so soon as the fuse is melted the arrester is useless until a fresh fuse has been placed. This is, however, a great nuisance, as well as dangerous when there is a thunder-cloud hanging over the wires. Lately many ingenious devices have been brought out for the purpose of making lightning-arresters simple and automatic in their action, and doing away with the fuses. They nearly all, however, have air-spaces over which the static discharge takes place, and the dynamo current is not permitted to follow.

The Phonograph at the White House.

THE speech of the Hon. W. E. Gladstone to the people of the United States was reproduced by the phonograph at the White House, Washington. Among those present were the President, Mr. Andrew Carnegie, of Pittsburgh, Mr. William Garrison, and Secretary Elijah Halford, who all returned through the same medium their congratulations to Mr. Gladstone. On the same day General Wager Swayne, Senator Jones, of Nevada, Major-General Schofield, U. S. A., Senator Manderson, General McCook, and many others sent their greeting to Henry M. Stanley, by phonograms, which were reproduced at a dinner given in his honor in London, England. Other exhibitions were also given in Washington at the residences of Mrs. General P. H. Sheridan, Senator Jones, and at a reception given by Mrs. President Harrison, at the White House. These exhibitions were given by the New York Phonograph Company, Fifth Avenue, New York City, of which Mr. Edward E. Lewis is the operator.

Hints on the Care of Cylinders.

THE new long cylinders now being manufactured are proving very satisfactory. The quality is better, and they have been well received by the users of the phonograph. Before placing the wax cylinder on the phonograph it is advisable to warm the mandril by holding your hand on it a few seconds; if this is done the cylinder rarely slips, and the needle holds adjustment much longer.

In regard to packing the cylinders an expert furnishes the following:

To pack cylinders for shipment (those on which records have been made), first wrap in cotton, and then in paper: this brings a soft even surface next to the cylinder. If the paper were placed next to the cylinder it would be apt to crease, and if allowed to remain some time would impair the record.

THE EDISON BUILDING.

THE new and handsome building which has been erected by the Edison General Electric Company, fronting on 42 and 44 Broad Street, and running through to 38 and 40 New Street, is rapidly approaching completion. It is

eight stories in height, not including the sub-basement, in which is located one of the finest electric plants for lighting ever erected in the city. Although most of the offices are required for the immense business of the company, on account of the situation and size of the building there are some offices and suites which are for rent. Its proximity to the Produce, Cotton, Consolidated, and Stock Exchanges, would make it a very desirable location for those interested. The building is a strictly fire-proof construction, having iron columns, girders, and floor beams, terra cotta floor arches, partitions, etc.

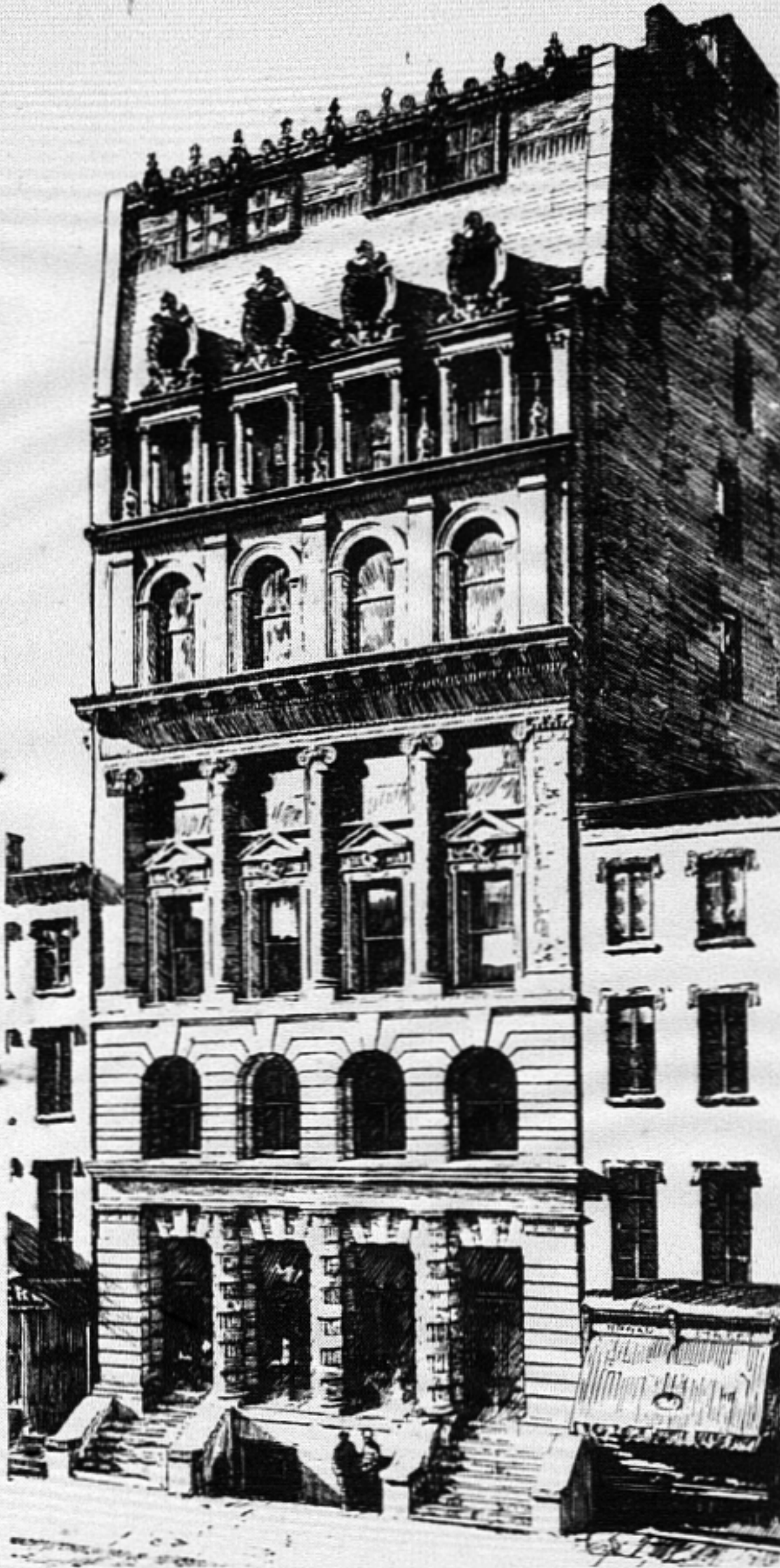
The front on Broad Street is of marble, brick, and terra cotta. There are four entrances, two on Broad Street and two on New Street, also two high-speed hydraulic elevators, and a complete steam-plant. All the modern conveniences may be found in the building, and the rent includes electric light, steam heat, and perfect janitor service. The erection of this handsome structure (designed by Messrs. Carrere & Hastings, and built by

Mr. Edward Kilpatrick), will undoubtedly facilitate the business of the Edison General Co., which has branches all over the country. At the head of this company is Mr. Henry Villard, President, who is well-known

as an organizer and director of largest business enterprises. Mr. J. H. Herrick, formerly President of the Produce Exchange, is first Vice-President, Samuel Insull, second Vice-President, A. Marcus, Secretary, F. S. Hastings, Treasurer, Assistant Treasurer, A. S. Benes, Comptroller, Joseph P. Ord, General Manager, H. M. Leonard.

With a capital of fifteen millions of dollars, and branches under the direction of experienced and able managers, the work and influence seem almost unlimited in extent. The law department of the company is under the direction of Hon. John S. Wise, whose recent brilliant address before the State Bar Association, on "New Litigation in the Highways, resulting from the use of Electricity," has been largely

read and commented upon. A new contract has been entered into between the company and Mr. Thomas A. Edison, under which he devotes the greater portion of his time to experiments and inventions for it, and the facilities of the laboratory at Orange, N. J., are placed at the disposal of this company.



JOHN P. BARRETT,
CHIEF ELECTRICIAN, WORLD'S COLUMBIAN EXPOSITION.

BY GEORGE HELI GUY.

THE selection of an electrician-in-chief of the World's Fair, which has been so long delayed, has at length been made, and the choice has fallen on Professor John P. Barrett whose name has, during the last few years, been so intimately connected with the electrical development generally in the city of Chicago. That the appointment is well-advised there can be no question, and with the efficient engineering and technical staff with which Prof. Barrett may safely be trusted to supplement his own great experience, the organization and exhibition in 1893 of such a display of the arts of electricity as the

world has never seen is a foregone conclusion.

Prof. Barrett's career affords another instance of the extent to which self-made men are indebted for their success to pluck, steadfastness of purpose and the ability to triumph over circumstances.

He was born sixty-one years ago, and his parents went to Chicago when he was but seven years of age. He had but little time for books, for, at the age of twelve he took to the sea. Beginning as a ship's boy, he

worked his way up to the position of an able seaman. During a voyage in the southern seas, a severe storm came on, and he was swept from the mast-head and sustained injuries which left him a cripple for life. He was taken to a hospital in San Francisco and after two tedious years of sickness and prostration he recovered and returned to Chicago.

The characteristics which entered so largely into his subsequent



JOHN P. BARRETT.

success had, however, already asserted themselves, for during his enforced idleness in the hospital, he applied himself to the study of electricity. On settling down to city life, he continued his course of self-improvement to such good purpose that he soon came to

be regarded as eligible for a responsible trust, and received the appointment of fire watchman in the City Hall tower, his duty being to sound the alarm on the first signs of a conflagration. When the fire department was organized on the metropolitan system, and telegraphy was employed as a means of communication between engine houses, he was made battery man and assistant operator under command of Chief N. P. Harris.

A strong proof of the confidence which his general ability had inspired is the fact that when he received this appointment he was unable to operate. He soon, however, not only became an expert operator, but devised new electrical applications for increasing the efficiency of the service, and ultimately developed the fire-alarm telegraph system, which is in general use to-day. One of the most ingenious of his inventions was a "joker," a device which enables the alarms to be received in the engine houses at the instant of their arrival at the central station, while the horses are released and the firemen notified of the call simultaneously.

Another admirable contrivance which owes its introduction to Prof. Barrett is the still switch, which calls out only those companies whose services are required. Besides making a large number of improvements in the fire-alarm system which have been adopted all over the world, Prof. Barrett turned his attention to the lighting of the Chicago river by electricity, the police patrol system, the underground telegraph system, and the bridge telephone system, all of which were rendered efficient under the influence of his skill and administrative ability.

But the scheme which has of late years brought Prof. Barrett into especial prominence, and which has added most materially to his reputation, is the removal of poles and wires from the streets, and the conception of a system of underground electric service for the lighting of the city.

In this salutary reform Chicago led the world, and with it the name of Prof. Barrett will always be inseparably associated. He himself regards this as the crowning success of his career, and it has been attained by indefatigable work and invincible determination and by the exercise of supreme ability and matured judgment. It is not to be wondered at, that Prof. Barrett should feel some pride in contrasting with the fifth-rate city into which he was brought over fifty years ago, the Chicago of to-day, with its wide, far-reaching streets, unobstructed by unsightly poles and wires, and its palatial buildings and teeming population, and in knowing how largely he has contributed to its enlightened progress. Prof. Barrett, however, is not by any means disposed to rest on his laurels; and among his latest projects is a scheme for closing the bridges of the city by electric power from the main station in the City Hall, and the establishment of a factory for the manufacture of electrical supplies for the municipality.

In the hands of Professor Barrett there can be no doubt that the administration of the electrical section of the World's Fair of 1893 will be vigorous and successful.

Among the Trades.

"You may stop at a cigar store and light your cigar from a tiny electric current; you may see a workingwoman sewing on a machine run by the same power; you may witness the hoisting of great weights, and the moving of derricks at points where buildings are being constructed, but steam is no longer employed for this purpose; in mines, electricity serves to produce the light, to move the elevators, to run the tramways, to set in motion fans which keep the air pure. Finally, in some of our war-vessels, where as many as sixty engines are used to light, heat, hoist, ventilate, elevate and depress guns, and handle ammunition, and propel the ship, one single electric plant can take the place of these, and at the same time secure immunity from many accidents caused by steam."

Truly, electricity is a king among forces!

THE PARK BANK.

ITS ELECTRICAL APPLIANCES.

AMONG the first of our large financial institutions to introduce a system of electrical apparatus for its building was the "Old Park Bank" which for nearly half a century has maintained its reputation as one of the oldest and strongest of our city banks. Throughout the entire country the name of the Park Bank has been recognized by the commercial world as the synonym of financial credit, and its past record is without a blot. It passed safely through the panics of the last forty years, its policy being controlled by a board of directors, which has contained the names of many of our solid merchants. For this reason, and the character of its business, it maintains a reputation of being the

most solid of our banks. The banking house originally stood for many years on the site of the present Temple Court Building, but in 1865 after the burning of Barnum's museum, the present site was purchased, and in the year 1868 the present structure was erected. At that time it was considered the finest bank building in the city; even at the

present time, despite the many improvements introduced in modern buildings, it would be difficult to find an edifice which surpasses it in location, size, and the completeness of its business appointments.

At the time of the negotiation for the purchase of the present site, the directors were endeavoring to obtain the corner plot of ground where the *Herald* building now stands; but Mr. James Gordon Bennett, Sr., the founder of the paper, secured the property, and supposed that he also held the option for the other lot; but finally, by a shrewd transaction, the bank secured the property, a fact which Mr. Bennett never forgave. At the present time the active management of this institution



is under the immediate direction of the following board of officers: Ebenezer K. Wright, President, Dr. James H. Parker, Vice-President, Arthur Leary, 2d Vice-President, George S. Hickok, Cashier, and Edmund J. Baldwin, Assistant Cashier, with Mr. William W. H. Dakin as Manager of the Safe Deposit Company. Under this ad-

ministration, the business of the bank has steadily increased, and with the honor of an unbroken record for its credit, the best evidence of its present prosperity is shown by a surplus of over two and a half millions of dollars. In the list of directors may be found the names of men known throughout the financial and commercial world.

The foundation is of solid masonry twenty-seven feet thick, and the walls are built of massive granite blocks weighing nearly two tons each, and doweled together. The ceiling is of iron and steel in alternate layers, weighing over forty tons; many electric lights are placed in the ceilings, and in many of the different apartments. The entrances are secured by immense double doors of burglar-proof material, fastened with register locks capable of 227,000,000 changes, and further protected by electric time locks, which prevent the opening of the doors out of business hours.

No expense was spared in the construction and fitting up of the safety deposit vault to insure its absolute safety under all conditions.

This is the third oldest Deposit Company in the United States, and has been in successful operation for over twenty-five years. Electric apparatus for ventilating, and the Telephone and Electric Messenger Call are furnished for the use of its customers. The safes, of which there are over 1,000, are of different sizes, and are fitted with locks of the most improved order, each differing from all the others in the keys and combinations by which they are opened, and which are not known except to the holders of the same.

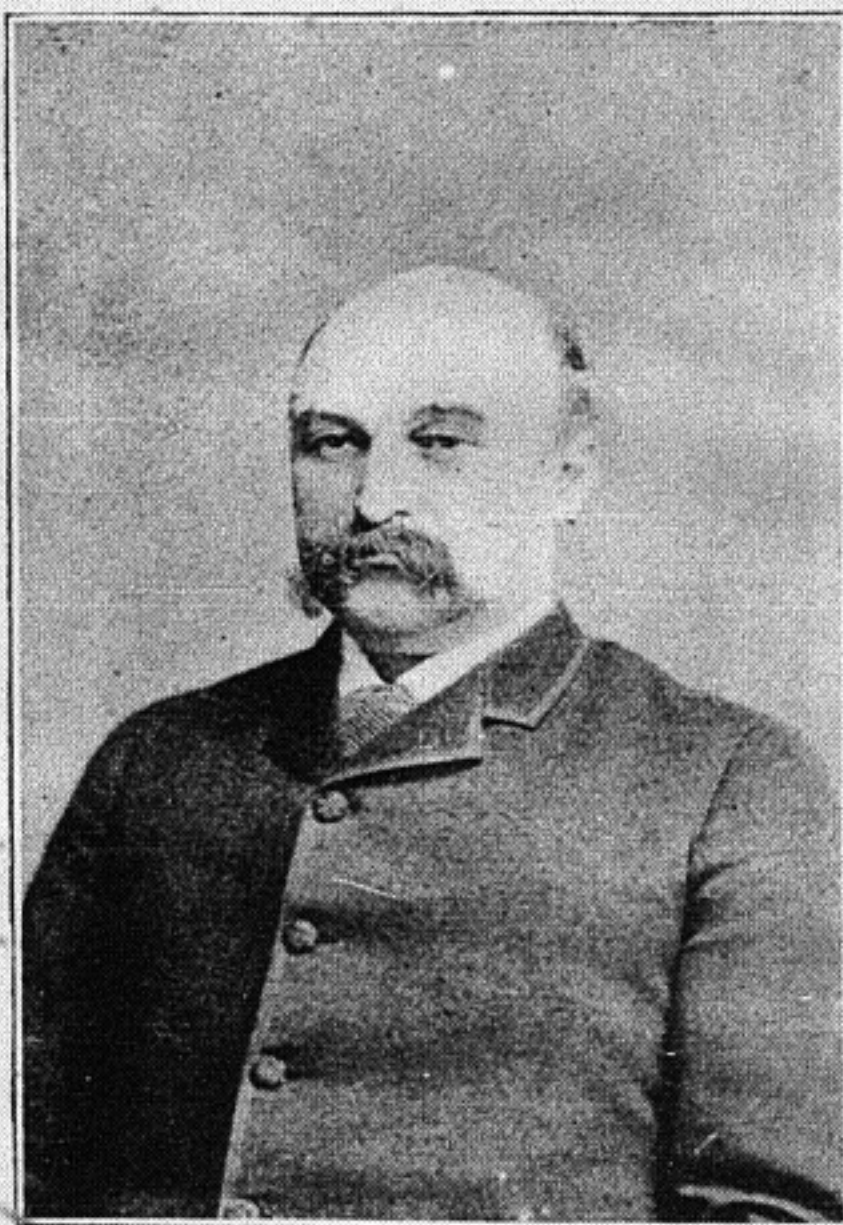
A great advantage to the depositor of money, securities, or valuables of any kind, is the fact that the only entrance to the deposit-vaults is through the bank.

In Dr. James H. Parker, the vice-president of the bank, and formerly president of the New York Cotton Exchange, they have a successful business man, who has, through his connection with the great Southern industrial interests, influenced a large amount of business from that quarter. Born in Johnson Co., North Carolina, in the early

portion of his life he practiced medicine. In 1870 he was connected with business interests in Charleston, and in 1883 came to New York, and was prominently connected with the Cotton Exchange, and in 1890 was elected Vice-President of the Nat. Park Bank. In appearance Dr. Parker is a man of commanding presence, and vigorous intellect, which is used to extend his influence among capitalists and others desiring a safe depository for their funds.

As in the past, so also at the present time, this bank enjoys the greatest confidence of other banks, manufacturers, and cotton and tobacco planters, who have the greatest confidence in Dr. Parker's judgment on financial matters, which is exerted to promote and extend the influence of this time-honored financial institution.

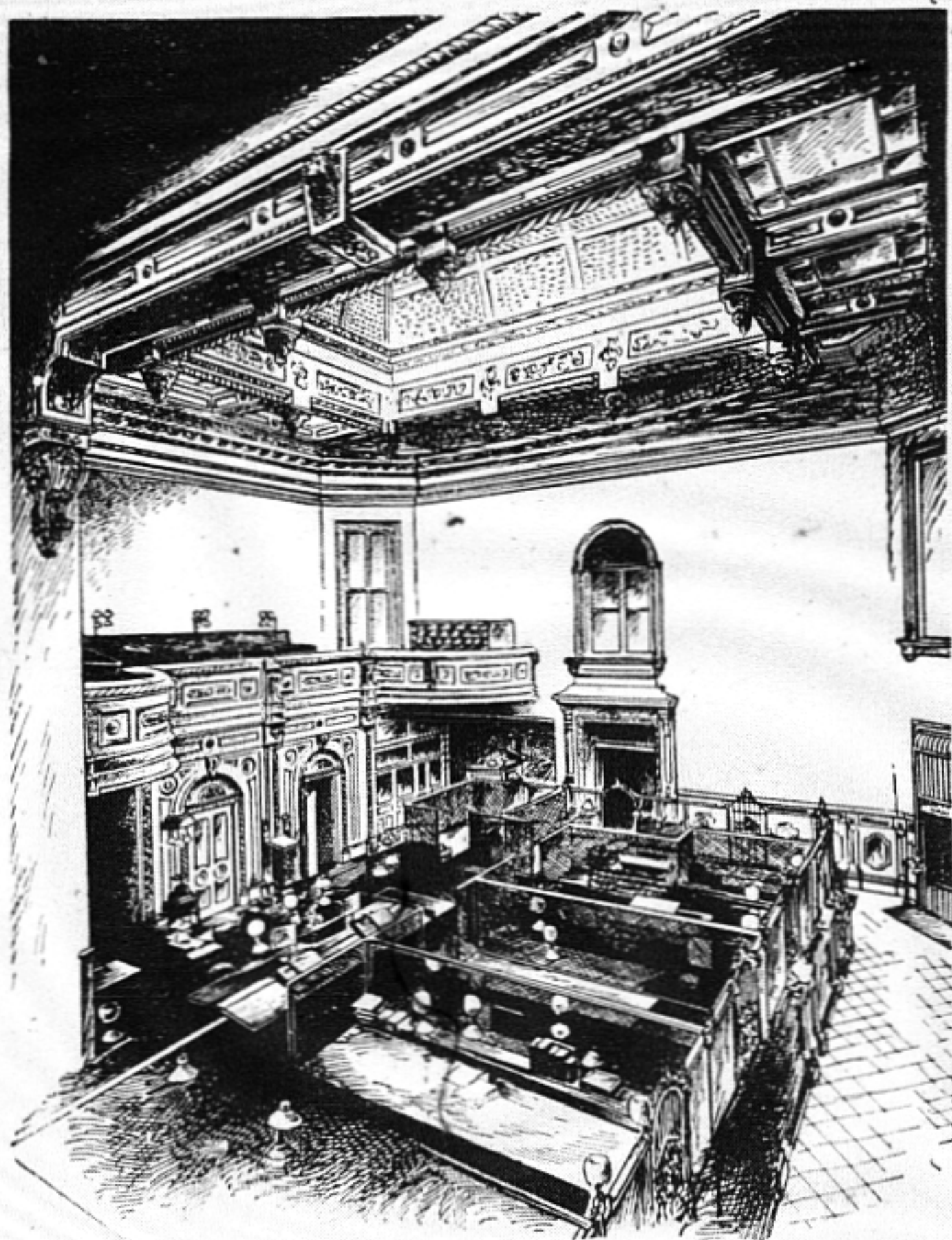
One feature of the banking-room of the Park Bank is the light which is obtained through the glass roof: this affords ample light both on the main floor and galleries,



DR. JAMES H. PARKER.

of which there are two; the panels of this ceiling are decorated with handsome designs in fresco-work, and the general effect of the arrangement of the light is especially good. The reading-room, in front of the safe deposit vaults, is fitted up with a stock indicator, the daily papers, stationery, etc.

Another special feature of this department is the number of handsomely furnished rooms for the accommodation of those having estates in charge, ladies and others desiring to have privacy in the examination of their securities and valuables.



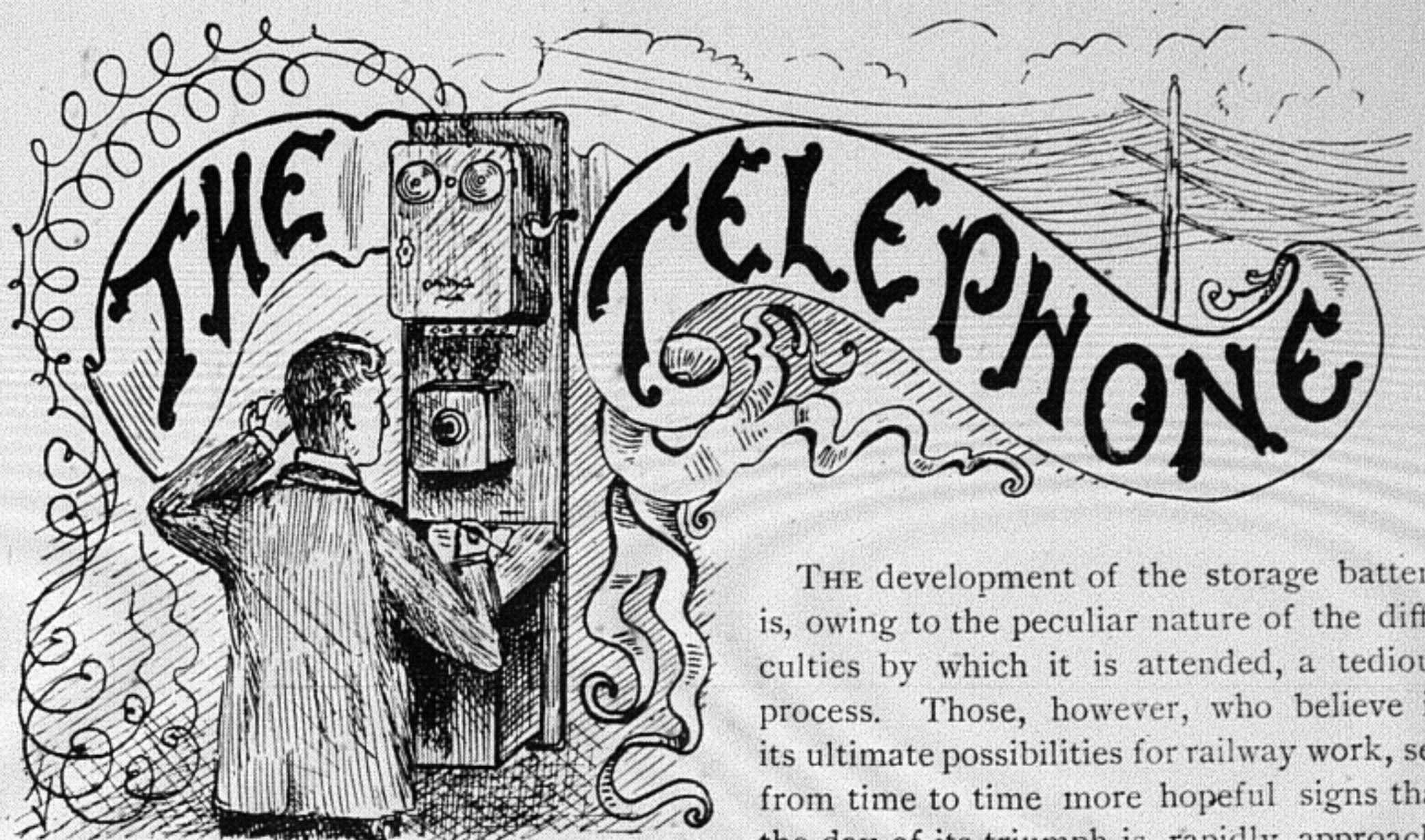
INTERIOR OF THE PARK BANK.

ELECTRICITY IN MODERN LIFE.

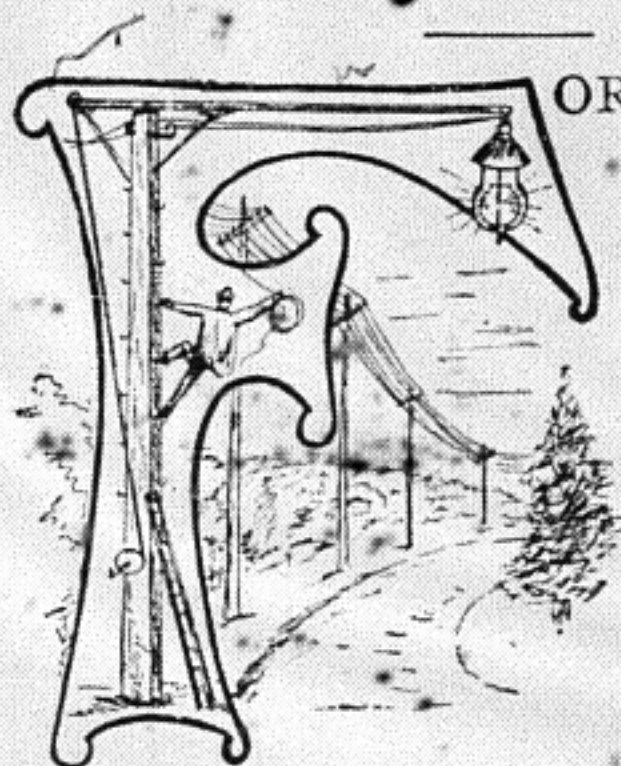
THE observer of progress in the electrical field cannot help being struck with the remarkable rapidity with which at times modifications of, and improvements on, any electrical invention will follow its introduction. No sooner is the feasibility of commercial electric heating established than a legion of applications of its principle are made, including the heating of houses and public buildings, and its employment in cookery, for foot-warmers, and for many domestic uses, including its utilization for the heat-

ing of the humble flat-iron. An improved device of this kind has now appeared which shows a material advance in comfort and efficiency on its forerunner. If a lady of domestic proclivities should now feel inclined to take a hand in the disposal of the family laundry, she can do it with serene satisfaction.

The electric heater can be brought into her most cozy room, and the regulation of the heat of the iron is simply effected by a pressure of the hand.



Increasing the Power of the Telephone.



FOR the purpose of increasing the power of vibration in the telephone Mr. Oscar Pohlmann, of Nuremberg, inserts a microphonic relay in the circuit. The disc of this re-

lay has on one side a very thin layer facing an electro-magnet, and on the other a microphone. In consequence of the waves of the current the electro-magnet causes the disc to vibrate; and, as a result, the microphone begins to move. The relay should be placed in a void or a space in which the air has been rarefied. The suppression of the air diminishes the resistance to be overcome by the disc, and its vibrations are extended or amplified, and the undulations of the current are thus reinforced. This apparatus will be found of advantage in long-distance transmission, according to the *Revue Scientifique*.

THE development of the storage battery is, owing to the peculiar nature of the difficulties by which it is attended, a tedious process. Those, however, who believe in its ultimate possibilities for railway work, see from time to time more hopeful signs that the day of its triumph is rapidly approaching. One of the most significant of recent indications in this direction is the adoption of the storage battery for street-railway work in Washington—a step which was taken after the most exhaustive tests of other methods of propulsion had been made. Mr. C. O. Mailloux, whose earnest and able pioneer work has won for him a reputation not confined to this country, has just given public expression to his conviction that for cities below 500,000 population the storage battery is destined to be the solution of the rapid-transit problem on surface roads.

THAT there is an ever-broadening field of usefulness for the arc-light is attested by the fact that nearly all of the large photo-engraving companies have added to their plants this artificial means of illumination.

The lamp is placed slightly above and to one side of the original to be photographed, and screened in such a manner that the rays may not enter the lens. While, of course, a strong sunlight is vastly superior for photographic purposes, still, by the use of electricity and the arc-lamp it is now possible to obtain good results at all times, irrespective of the condition of the weather, thereby reducing to a minimum the delays experienced in turning out plates by the photo-mechanical processes.

ARMY PORTABLE TELEPHONE.

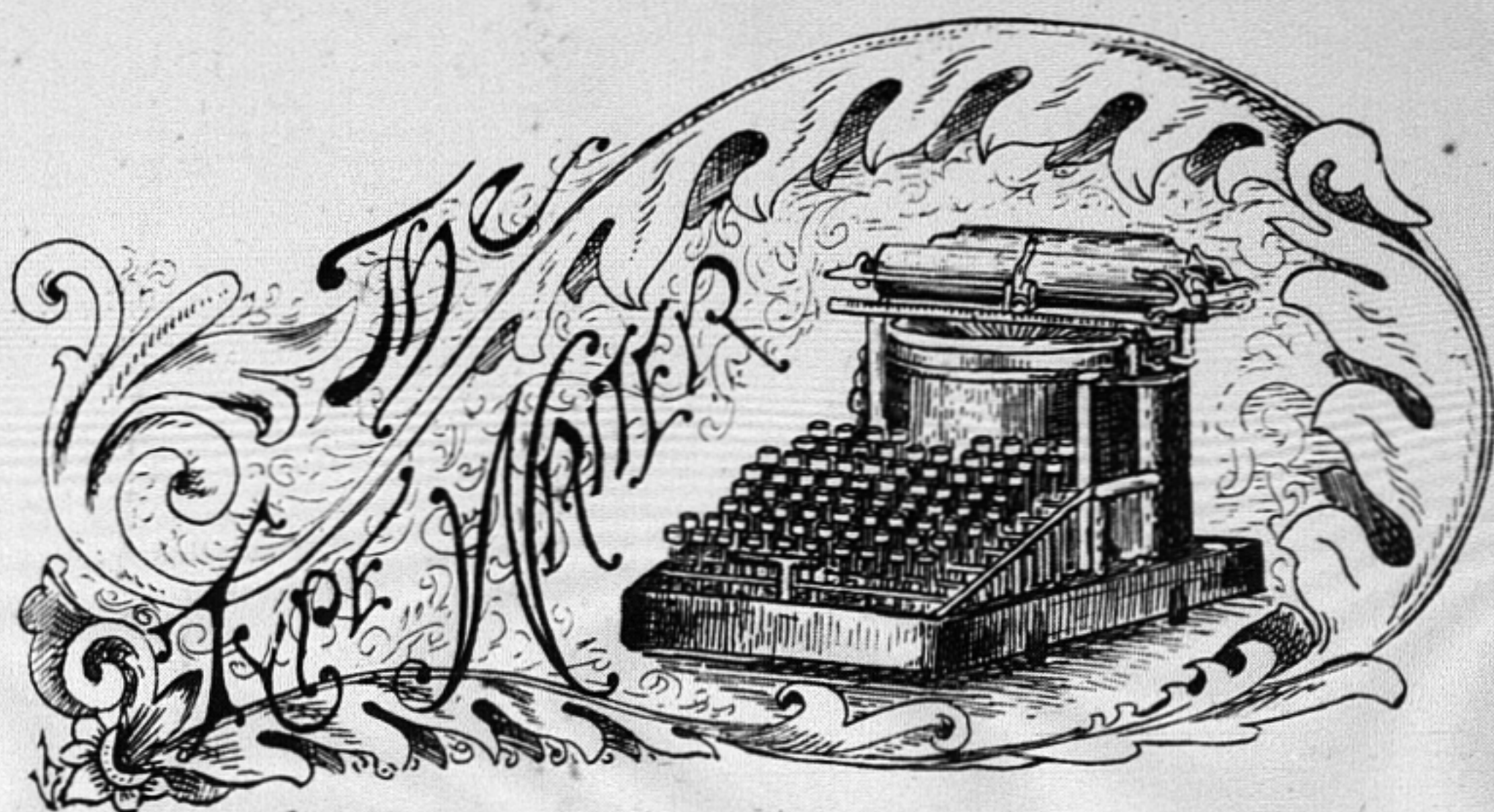
A FRENCH inventor, Roulez, has provided, for the use of the artillery service, a portable telephone which, by means of magnets, transmits the voice and rings the bell quite as well as with a battery. Ever since the appearance of the telephone, inventors have sought to dispense with the battery, but though a number of magnets have been in-

pass those of all other telephones. This instrument can be carried in a hand-bag, and does not require any support. It is easily regulated. The magnetic call-bell operates at a distance of fifty miles without relays, which is double the distance that can be reached by battery telephones. The voice is transmitted with extraordinary



vented, none of them previous to this one have been found to give as good results as those using the electric pile. All these magnetic telephones have been made with a horseshoe magnet and bobbins of copper wire; but M. Roulez conceived the idea of using two magnets with the same poles opposed and separated by a small piece of soft wire, and has thus obtained results that sur-

clearness to a distance of more than four hundred miles. The inventor has offered it to the government, reserving for himself the right to manufacture and use it in a commercial and domestic way. The military regulations require the telephonists at advanced posts to carry the receivers constantly attached to their ears, so that the bell-call is only of use to those at fixed posts.



Typewriter Mechanics.

I.

TOWARD the middle of the eighteenth century, a patentee appeared in England whose application called for a patent of an instrument which should accomplish the work of the pen by machinery. Here is the nucleus of the typewriter trade.

To-day, viewing the march of progress from a point not so far distant, we see the original idea of "writing by machinery" so well developed that there is hardly an office between Maine and California where a typewriter is not used. In many places the number will reach several hundreds utilized by the employes of one corporation.

Instead of the typewriter being a costly luxury, as it was deemed a few years ago, no office is now considered fully equipped with the bare necessities unless one or more instruments figure.

With the increasing demand for machines has developed the ever-quick perception of inventors that not only will the future bring still greater demands, but "there is room in the world for us all."

Monopolies in the typewriter manufacture and business have ceased to exist: there are so many kinds of machines, all competing for public favor, and all meeting with public approval. That there are some machines which deserve greater praise because capa-

ble of greater things than others, none can deny.

Too little is known about the mechanical construction of the various typewriters. The public knows in the main that there are "type-bar" and "type-wheel" machines; but the further differences are not well enough understood to be of any value to a man in his selection of the best writing machine. And when one comes to question the majority of operators on the construction of machines, he soon finds that the operator values nothing except the facility with which the instrument can be operated.

A few remarks about the different mechanical devices governing the manufacture of some of the most popular machines will interest the reader, and give some information which may be useful.

Is a type-bar machine superior to a type-wheel machine?

Yes. Because in operating the true type-bar machine, one letter alone is moved by a single stroke. In the type-wheel machine, one-half the characters of which the machine is capable are moved in order to produce a single letter. The greater the weight to be moved, the greater the effort to move it.

Try to revolve on a perpendicular pivot two segments of a circle, any point of either of which must strike at a given centre. The faster this result is labored for, the greater will be the collision between the two segments.

IN operating a type-wheel machine, the friction is concentrated on one point, while in a type-bar machine it is equally distributed over several points.

Practically, in the use of a type-wheel machine, the whole wheel must be replaced when a single letter is defaced, broken or worn out. With a type-bar machine any individual character can be replaced for a trifling cost, and without rendering useless the rest of the characters.

Which is more desirable, a straight keyboard, or a circular one? Undoubtedly a straight keyboard. The secret of operating a typewriter comfortably and with little fatigue, is the ability to sit at the instrument in an easy, natural position. If the hands are compelled to activity, the elbows should be comfortably near the sides of the operator. In operating a circular keyboard this is not possible (especially since all the circular key-board machines now known are on the convex pattern). The larger the circle the more wearisome is the operation, since at times it forces the elbows from their natural position, and soon this difficulty becomes apparent to the operator by heaviness of the limb, and tired wrists.

Having taken the ground therefore, that type-wheel machines are not as desirable (from the above mechanical principles) as a type-bar machine, it will be the writer's privilege in the next issue to show why a type-bar is the only true principle on which to create a typewriter which will prove a permanent and reliable investment to the purchaser.

E.

"Two Years a Half with Thomas A. Edison" is the subject of an interesting lecture, which was given by Dr. Frank M. Deems, at Hornellsville and Canisteo, N. Y., and also before a large audience in the chapel of the Church of the Strangers, New York City, on March 12th. Dr. Deems's intimate knowledge of the subject, and the introduction of excellent pictures, made the lecture exceedingly attractive, and we are glad that he has met with the success which the subject and Dr. Deems's familiarity with it deserve.

-Phono-Chat.-

A BRILLIANT reception was given by Mrs. Thomas A. Edison at "Glenmont," her beautiful home in Llewellyn Park, in honor of her sisters, the Misses Miller. About seventy-five guests were present. The suite of rooms used for dancing, including the blue room and the reception-rooms, which are a marvel of beauty in themselves, were further beautified by rare cut flowers and tropical plants, the numerous clusters of incandescent lamps making the scene a most brilliant one. The phonograph rendered music for one of the quadrilles, and a New York orchestra dispersed lively strains for the other dances.

At a late meeting of the Franklin Experimental Club, of Newark, N. J., the *fac-simile* of Benjamin Franklin, by the aid of a phonograph, delivered the following speech: "My dear friends—Through the genius of Thomas Edison I come back to you from the past of over a century ago. I am glad to find I am so well remembered, and am well pleased to preside at the first annual banquet and meeting of the Franklin Experimental Club of Newark." The venerable gentleman then repeated a number of the wise sentences to be found in his *Poor Richard's Almanac*, and concluded by solemnly telling where he was born and when and where he died. President Hammer was the only speaker to precede the philosopher. He sketched briefly the circumstances under which the club was founded. Its object is to promote study and original research in the natural sciences among young men, and to fit out suitable laboratories, reading-rooms, etc., for the use of each member.

THE COLUMBIA PHONOGRAPH COMPANY, whose main office is in Washington, D. C., has just issued a new list of users of phonographs and graphophones in Maryland, Delaware, and the District of Columbia.

AN entertainment was lately given at the Standard Theatre in New York, in which the Edison Phonograph appeared conspicuously. Several delightful selections were rendered. Among those which were encored were a cornet solo by Mr. Mr. John Metthower, and the "Whistling Coon." Also a xylophone, with orchestral accompaniment, was enthusiastically rendered. The phonographic exhibition was ably conducted by Mr. E. E. Lewis, connected for many years with the New York Phonograph Company.

MR. H. D. SELLERS, President of the Louisiana

Phonograph Co., and Messrs. Hugh R. Conyngton and Thomas Conyngton, General Managers of the Texas Phonograph Co., have been visiting in the city. They well represent the phonograph interest in the Lone Star State, and report business as satisfactory.

Now Congress has adjourned, Messrs. Petrie & Law have opened a phonographic typewriting and copying bureau in Washington, D. C. These gentlemen are rapid and experienced transcribers on the typewriter from phonograph dictation. Mr. Petrie has had nearly three years' practical experience. Both Petrie and Law have acted as transcribers for the Senate reporters of debates during the last two sessions of Congress. As they thoroughly understand their business they are certain to succeed.

THE case of Dusen against Emonds, which was lately tried before Judge Blauvelt at Newark, N. J., was decided in favor of the defendant, Edward Emonds. The facts of the case are as follows: Emonds was charged with a conspiracy to ruin the plaintiff's business, and Mrs. Dusen, who claimed to have only two boarders left, brought suit for satisfaction. The faithful phonograph, which had been placed in the kitchen, reproduced the observations of the boarding-house keeper in conversation with her cook, and when placed on the dining-room table ground out abuse of the defendant. Justice Blauvelt maintained that the *phonograph would not lie*, and dismissed the accused.

A MEETING of Western Phonograph Companies was held at Omaha, Neb. The following companies were represented: The Missouri Company by Mr. J. C. Wood; the Central Nebraska, Montana, and Iowa Companies were represented by Mr. Benson. The meeting was called for the purpose of comparing ideas on the nickel-in-the-slot machines with the view of selecting and adopting the best machine for use in their territory. Among those shown the Chicago machine and the St. Louis worked very satisfactorily. A clock-work machine was exhibited by Mr. Benson. A reverse-screw machine was also exhibited by Mr. McLelan. The western companies seem fully alive to the necessity of concerted action in promoting their common interests, and THE PHONOGRAM will do its share in the good work.

THE West Pennsylvania Phonograph Co., which controls a large district, of which Pittsburgh is the distributing centre, is coming rapidly to the front; its three hundred copies of THE PHONOGRAM are doing effective work, in this instance, as they will in every other case when they are properly circulated.

THE New England Phonograph Company have, during the month, given upwards of thirty exhibitions, at lodges, societies, and fairs, and have invariably received the encomiums of the public for the excellency of their work.

We made an error in our previous publication, by stating that Mr. F. A. Ashcroft was in charge of the exhibition business of this company. This is not so; Col. A. N. Sampson is the only manager connected with this company, and has charge of both the commercial and amusement side. Messrs. Child, Foote, and Ashcroft are, however, the exhibitors that take care of the regular exhibitions which are given under the auspices of this company.

AN Iowa judge declared that a boy, who emptied a nickel-in-the-slot machine by means of a nickel with a string tied to it, was guilty of nothing in the eyes of the law for which he could be punished, as he had merely done what the inscription on the machine told him to do, nothing being said by the inscription about leaving the nickel in the machine after it had been dropped in. The *Chicago Journal* says this decision, "will probably abate a nuisance." But it will probably do nothing of the kind, even granting that the machines are a nuisance; for it will be easy to arrange them so that no nickel with a string to it will trip the mechanism, or so that no string will draw the nickel out after it has operated the machine. And as to the machines being a nuisance, this is at least disputable. If the public did not wish to patronize them they would not pay, and would soon be withdrawn.

Two Australian theatrical managers have bottled up in phonographs for transportation to the antipodes the voices of several American actors, singers, and statesmen. Fortunately for Australians they cannot transplant the skirt-dance in this manner.

THE Columbia Phonograph Co., Washington, D. C., under the energetic management of President E. D. Easton, has just declared its fourth dividend.

ALL the nickel-in-the-slot machines have been "beaten" at different times by shrewd, sharp, scheming people, but the latest is beating the Edison phonograph. I saw two men approach one recently, look shyly around to see if they were observed, and, after dropping a coin in the machine, grasped each by the hand, each placed a tube to his ear and heard Patti for 2½ cents.

THE PHONOGRAM is essentially a magazine of current literature.

Echoes from Washington.

THE COLUMBIA PHONOGRAPH CO.
OF MARYLAND, DELAWARE, AND THE
DISTRICT OF COLUMBIA.

627 E St., N. W., WASHINGTON, D. C.,

March 6, 1891.

To the Editor of THE PHONOGRAM:

Inclosed please find copy of an advertisement for your March number. So clearly has the value of the PHONOGRAM been demonstrated, that you may give us, this month, one half a page, instead of one quarter. We have received inquiries from all parts of the country for information relative to musical records and to language-teaching, and are sure the public can be reached in no more certain way than through your columns.

Dr. Rosenthal is still delivering free lectures in Washington, and adding to his large classes those who study languages by the aid of the phonograph. The effort has been to so reduce the cost of instruction as to place it within the reach of all; and since your last publication, arrangements have been made to record on twenty-four cylinders the conversational course of the Meisterschaft system in any one language—French, German, Spanish, or Italian.

With each set of cylinders a set of books is furnished, and the student educates eye and ear at the same time. The cylinders and books covering a single language are now sold complete for \$25; and the right of correspondence with the author, correction of all exercises and reply to all questions is included.

Dr. Rosenthal has organized in this city language clubs, at which daily lessons are given by the phonograph for ten dollars for each individual for three months.

Some of our new commercial subscribers since last writing are:

State Department, Consular Bureau, two phonographs.

Department of Justice, two phonographs.

Chief Clerk Treasury Department, two phonographs.

The Mexican Minister, one phonograph.

The *Evening Star*, four phonographs.

Mr. J. H. Turner, Secretary National Farmers' Alliance, E. J. Gibson, Washington Correspondent *Philadelphia Press*, Riddle and Davis and W. F. Mattingly, Attorneys at Law, the Boston Variety Store and the Columbia Athletic Club (the largest and most popular social club in this city), are also among our new subscribers of the past month.

In Baltimore we have recently rented machines to Dr. H. McLane Tiffany, the D. B. Stewart Company, Hon. Charles J. Bonaparte, Charles M. Stieff, the piano manufacturer, Joseph Bowes, agent Equitable Life Insurance Company.

The United States Marine Band is to make a tour of the country, starting early in April for a month's absence. We are laying in a large stock of records previous to their departure.

The Senate and House reporters of debates went through the last session without experiencing friction in the use of talking-machines and with such satisfactory results in time and money saving, that we have been advised a still larger number of instruments will be used in both houses next session.

Yours truly,

E. D. EASTON, President.

◆ ◆ ◆
Old Dominion Steamship Line.

THE Old Dominion Steamship Line, which for many years has been the favorite route to Old Point Comfort, Annapolis, Washington, Baltimore, and contiguous towns, is a delightful contrast to a trip by rail. In the spring, especially during the months of April, May, and June, we know of no more pleasant or invigorating water journey than that by the Old Dominion route, with the sail up the Chesapeake Bay. At the present time of the year, the season at the "Hygeia Hotel" is at its height, and the long, broad piazza of the hotel is crowded with hundreds of distinguished guests from every part of the Union.

◆ ◆ ◆
THE Amberg File and Index Co. have removed from 69 Duane Street to more commodious quarters at 79 and 81 Duane Street. Send for new Illustrated Catalogue and Price-list.

WHAT THE PEOPLE SAY.

TESTIMONIAL LETTERS FROM OFFICERS OF THE PHONOGRAPH COMPANIES OF THE UNITED STATES.

IN ORDER TO SHOW THE CHARACTER OF THE WELCOME ACCORDED TO "THE PHONOGRAM," WE PRESENT THE FOLLOWING EXTRACTS FROM SOME OF THE MANY HUNDRED LETTERS RECEIVED SINCE THE ISSUE OF THE FIRST NUMBER.

NEW ORLEANS, LA., March 2, 1891.

Dear Sir:—Your favor of the 27th ult. before me. Also received by mail lot of fifty PHONOGRAMS. We are pleased with this edition and consider it far superior to the January number.

Please forward by mail immediately fifty more copies.

Yours very truly,

F. E. CLARKSON, Gen. Manager.

GALVESTON, TEXAS, March 3, 1891.

Dear Sir:—We must, indeed, congratulate you upon the improvement over the first number of your paper, with many thanks for your kind opinion of our automatic attachment for the phonograph. Wishing you success, I remain

Yours very truly,

TEXAS PHONOGRAPH COMPANY.

Per M. S. BEARK, Cashier.

BOSTON, MASS., March 4, 1891.

Dear Sir:—We have read the second number of the PHONOGRAM with a good deal of pleasure. It is very much superior to the first number, and meets our approbation.

We have no objections to make to your editorial article, which we think is a very careful view of the situation of affairs. We are,

Yours very truly,

AUG. N. SAMPSON, Gen. Manager

New England Phonograph Co.

NEW YORK, March 4, 1891.

Dear Sir:—The present number of the magazine is gotten up in very attractive form. This Company will endeavor to contribute articles for the next issue of the PHONOGRAM, with illustrations

Yours very truly,

RICHARD TOWNLEY HAINES, Secy.

WILMINGTON, N. C., Feb. 19, 1891.

Dear Sir:—I have just received a copy of the PHONOGRAM, and being the Resident Manager of the Old Dominion Phonograph Co. for this section, will take great pleasure in trying to secure subscribers. I will start this list by enclosing you \$1 for one year's subscription for myself. I am very much pleased with the magazine, as it fills a long-felt want in the phonographic field.

You are certainly to be commended on your enterprise, pluck, and good judgment in this matter. I am educating the people of this vicinity in the use of the phonograph.

If it is not inconsistent I would like to have you furnish me with a half-dozen or more of your magazines; to use in the way of securing subscriptions. Wishing you an abundance of success, I remain

Yours very truly,

C. I. COMFORT.

COLUMBIA PHONOGRAPH COMPANY,

627 E STREET, WASHINGTON, D. C.

WASHINGTON, D. C., March 6, 1891.

Dear Sir:—Your esteemed favor of yesterday is at hand. Please renew our advertisement. If this advertisement is as profitable, in proportion, as the last was we shall be encouraged to a still further expenditure of printers' ink. Thus far we have positive evidence, in dollars and cents, of the value of the PHONOGRAM in a business way.

You are doubtless aware the commercial use of talking machines was begun in Washington, before the organization of the North American Company. The writer has employed a mechanical stenographer more than three years. It was our view, in the beginning, that only the commercial use of the machines should be given prominence. Experience, however, seems to teach that every legitimate use of the phonograph should be given due consideration; and that the more uses, the more valuable the machine to manufacturers and companies.

We are heartily interested in the PHONOGRAM, and will give you every possible support.

Yours truly, E. D. EASTON, President.

JACKSONVILLE, FLORIDA, March 6, 1891.

I beg that you will pardon my long delay in answering your favor of the 13th February. I have been endeavoring to secure some subscribers to your most excellent publication. The second number came to hand a few days ago and I have enjoyed reading it much. I congratulate you upon its general excellence. Please find enclosed \$2 to pay my subscription for one year and also the subscription of Capt. John L. Inglis. He is the president of the Florida Co. I shall do my very best to send you in a short time some subscriptions. With the very best wishes for the success of the PHONOGRAM, I remain

Yours truly, T. FOSTER GAINES, Supt.

EDISON GENERAL ELECTRIC COMPANY,

BANK OF COMMERCE BUILDING,

TORONTO, CANADA.

Dear Sir:—I enclose you post-office order for \$2.40, for one year's subscription of the *Cosmopolitan* and PHONOGRAM. I have read the two copies you sent to me with great interest. I am exceedingly pleased that such a paper should be published, and must say that the manner in which the articles are written, and the paper is edited, reflects great credit upon its management. I trust that the paper will be of great value to all interested in electrical matters, especially in that remarkable invention, the phonograph. Wishing you all success, I am

Yours truly,

M. D. BARR, District Manager.

== Special. ==

Celebration of the Beginning of the Second Century of the American Patent System by Inventors and Manufacturers of Patented Inventions, at Washington, D. C., April 8, 9, and 10, 1891.

First Public Meeting, * afternoon, April 8, 1891. To be presided over by the President of the United States.

Second Public Meeting, April 8, 1891, 7 to 8.30 P. M. To be presided over by the Honorable John W. Noble, Secretary of the Interior.

Special Reception to Inventors and Manufacturers, and the ladies who accompany them, at the Patent Office, April 8th, 9 to 11.30 P. M., by the Honorable John W. Noble, Secretary of the Interior, and the Honorable Charles Eliot Mitchell, Commissioner of Patents.

Third Public Meeting, afternoon, April 9, 1891. To be presided over by Hon. Frederick Fraley, LL. D., President of the National Board of Trade and the American Philosophical Society, and Charter Member of Franklin Institute.

Fourth Public Meeting, evening, April 9, 1891. To be presided over by Professor S. P. Langley, LL. D., Secretary of the Smithsonian Institution.

Anniversary Day, April 10, 1891. Anniversary of the Signing of the First American Patent Law—"An Act to Promote the Progress of the Useful Arts"—by George Washington.

Excursion to Mount Vernon, 10 A. M., where an address will be delivered by J. M. Toner, M. D., of Washington, upon "Washington as an Inventor and Promoter of Improvements."

Fifth Public Meeting, evening, April 10, 1891. To be presided over by Prof. Alexander Graham Bell.

Addressees upon the following subjects are promised at the public meetings:

Edward Atkinson, Ph. D., LL. D., of Massachusetts.—Invention in its Effects upon Household Economy.

Dr. John S. Billings, Curator U. S. Army Medical Museum.—American Invention and Discoveries in Medicine, Surgery, and Practical Sanitation.

Hon. Samuel Blatchford, Justice of the Supreme Court of the United States.—A Century of Patent Law.

Cyrus F. Brackett, M. D., LL. D., of New Jersey, Henry Professor of Physics, College of New Jersey, Princeton.—The Effect of Invention upon the Progress of Electrical Science.

Hon. Benjamin Butterworth, of Ohio, U. S. House of Representatives.—The Effect of our Patent System on the Material Development of the United States.

Octave Chanute, of Illinois, President of the American Society of Civil Engineers.—The Effect of Invention upon the Railroad and other means of Inter-Communication.

Professor F. W. Clarke, S. E., of Ohio, Chief Chemist U. S. Geological Survey.—The Relations of Abstract Scientific Research to Practical Invention, with Special Reference to Chemistry and Physics.

Hon. John W. Daniel, of Virginia, U. S. Senator.—The New South as an Outgrowth of Invention and the American Patent Law.

Major Clarence E. Dutton, Ordnance Department, U. S. A.—The Influence of Invention upon the Implements and Munitions of Modern Warfare.

Thomas Gray, C. E., B. Sc., F. R. S. E., of Indiana, Professor of Dynamic Engineering, Rose Polytechnic Institute, Terre Haute.—The Inventors of the Telegraph and Telephone.

Professor Otis T. Mason, Ph. D., of Virginia, Curator U. S. National Museum.—The Birth of Invention.

Hon. Charles Eliot Mitchell, of Connecticut, Commissioner of Patents.—The Birth and Growth of the American Patent System.

Hon. O. H. Platt, LL. D., of Connecticut, U. S. Senator.—Invention and Advancement.

Col. F. A. Seely, of Pennsylvania, Principal Examiner U. S. Patent Office.—International Protection of Industrial Property.

Hon. A. R. Spofford, LL. D., Librarian U. S. Congress.—The Copyright System of the United States: Its Origin and its Growth.

Hon. Robert S. Taylor, of Indiana.—The Epoch-Making Inventions of America.

Robert H. Thurston, A. M., LL. D., Doc. Eng., of New York, Director and Professor of Mechanical Engineering, Sibley College, Cornell University.—The Inventors of the Steam Engine.

* It is proposed to hold meetings for the organization of the National Association of Inventors and Manufacturers on the afternoon of April 7th, and in the morning on April 8th and 9th, and at such other times as may be necessary.

† Addresses are also expected from prominent Inventors and Manufacturers at the meetings for the organization of the National Association.

William Trowbridge, Ph. D., LL. D., of New York, Professor of Engineering, School of Mines, Columbia College.—The Effect of Technological Schools upon the Progress of Invention.

Hon. Edwin Willits, of Michigan, Assistant Secretary of Agriculture.—The Relation of Invention to Agriculture.

Hon. Carroll D. Wright, M. A., of Washington, Commissioner of Labor.—The Relation of Invention to Labor.

Authors and Publishers.

THE *Home-Maker*, under the editorship of "Jenny June" (Mrs. Croly), and an able staff of contributors, is pushing its circulation in almost every State in the Union. A brilliant corps of writers, chiefly ladies, make up each month a most enjoyable number.

THE *Stenographer*, a monthly magazine, edited by Francis H. Hemperley, and published in Philadelphia, Pa., is a bright, interesting publication, full of matter especially interesting to the shorthand writer. The March number is increased in size to fifty-two pages. While we return the compliment paid us in the February number of the *Stenographer*, we would respectfully state that the article on reporting by the phonograph in our January number was sent in by Mr. James O. Clephane, and is in his handwriting.

THE *Electric Engineer* is undoubtedly a popular publication with the trade and persons interested in the development and progress of electrical inventions; its descriptions of new apparatus, and the illustrations of the same are very satisfactory.

ANOTHER publication, which is making its way to the front, is the *Electric Age*, published in the Pulitzer Building, and edited by T. P. Taltevall. The enterprise displayed by the business department of this paper is shown by the complete report, with handsome illustrations, of the various departments of the exhibition at the recent meeting of the National Electric Light Association at Providence, R. I.

MESSRS. JOHN UNDERWOOD & CO., of No. 30 Vesey St., New York City, is one of the largest houses whose specialty is the handling of supplies for the typewriting machines. Among an extensive variety of ribbons in all colors are also duplicating inks to match. These inks are endorsed by the Government, and are the best for all processes where a stencil is used. The Underwood Hexicon, gilt stenographic pencil, is another of the specialties of this firm—in fact, all first-class goods needed by the typewriter may be ordered from this house, and the order or reply will be sent by the first return mail. The quality of their carbon paper and special grades of linen paper is second to none in the market.

3.
THE NEW YORK
PUBLIC LIBRARY

ASTOR, LENOX AND
TILDEN FOUNDATIONS

OLD DOMINION STEAMERS

PROPOSED SAILINGS, SPRING SEASON, 1891,

From Pier 26, North River, Foot Beach St., N. Y.

ALL STEAMERS SAIL AT 3 P. M. FROM NEW YORK.

First-class Tickets include Meals and Stateroom Accommodation on Main Lines of Company.

The "Wyanoke" (sailing Wednesdays) and "Old Dominion" (sailing Saturdays) go up the James River. (These ships make the round trip, New York to New York, in 5 days.) The "Old Dominion" passengers have Monday and Tuesday in Richmond. Passengers on the "Wyanoke" arrive Friday morning and leave Friday night. Time, to Norfolk, Newport News, Virginia Beach, and Old Point Comfort, about 24 hours; to Richmond, Va., 40 hours; to Petersburg, Va., 40 hours; Norfolk to Washington, D. C., 15 hours; Norfolk to Baltimore, 12 hours.

Steamers leave Norfolk, Va. (up the Potomac River), for Washington, D. C., daily. (Sundays excepted.) Old Dominion ships sailing from New York, Tuesdays and Thursdays, generally connect following evening after leaving New York.

SPECIAL NOTICE.—Tuesday's, Thursday's, and Saturday's ships stop to land passengers at the Government Pier, Old Point Comfort, one hundred yards from the Hygeia Hotel.

PASSENGERS can secure stateroom accommodations two or three weeks in advance of day of sailing. This can be done by letter, telegram, or telephone. Staterooms will NOT be held later than 2 o'clock on day ship sails, unless tickets are sold at time reservation for stateroom is made.

W. H. STANFORD, G. P. A.

Company's General Offices, 235 West St., Cor. Beach, New York.

"A FEW FACTS," with 368 Questions and Answers, 17th Edition Enlarged, with Maps and other additions. Copies of this book can be obtained on application at Company's Office.



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EDISON LALANDE BATTERY.

THE PHONOGRAPH AND PHONOGRAPH-CRAPHOPHONE.

THE Eastern Pennsylvania Phonograph Co.
*
130 South Fourth Street.

UNDER AUTHORITY OF

The North American Phonograph Co.

AND OF THE SOLE LICENSEE OF

The American Graphophone Co.

Philadelphia, October 7th, 1890. 189

Edison Manufacturing Company,
19 Dey Street,
New York City.

Gentlemen:-

The four (4) "T" cells, Edison Lalande battery, 900 amperes
hours, set up in our office, resulted in running a Phonograph con-
tinuously for 285 hours. This we consider an excellent result.

Very truly,

The Eastern Pennsylvania Phonograph Co.,

By

J. J. Kelly

JAMES F. KELLY, General Sales Agent,
19 DEY STREET. NEW YORK.